Southern Power & Industry

The Industrial and Power Journal of th nd Southwest

A W. R. C. Smith Publication

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AUGUST
1961

Paints & Protective Coatings

Reference Guide and Buyer's Directory for the South-Southwest

See Page 25

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Designed specifically for **Hot Water** *Operation*

with...

Venturi-Action Mixing-Tube

Venturi-Action Mixing Tube
plays a triple role:

1 It starts by mixing entrained water from the boiler with water entering the boiler.

2 Traveling through the tube, temperature is further modified by the surrounding water.

3 Jet action at the end of the tube directs flow downward and outward against the outer confines of the shell, providing a circulation pattern unequalled in any other hot water boiler.

SUPERIOR "TYPE CC"

This new Superior Hot Water Boiler eliminates the problems resulting from the use of steam boilers for hot-water heating. Most of these stem from improper circulation within the boiler.

Its newly designed Venturi-Action Mixing-Tube achieves a more effective use of the natural flow pattern for maximum efficiency in hot water heating.

In addition to its special hot-water design, features include 4-pass down-draft design, 5 sq. ft. of heating surface per bhp., built-in induced draft, fully automatic operation firing gas, oil or both, and a host of other features described in detail in the new catalog illustrated at left.

For sizes to 11,720,000 Btu's/hr., write for catalog CCW-15.
For sizes to 20,100,000 Btu's/hr., write for catalog CFW-15.

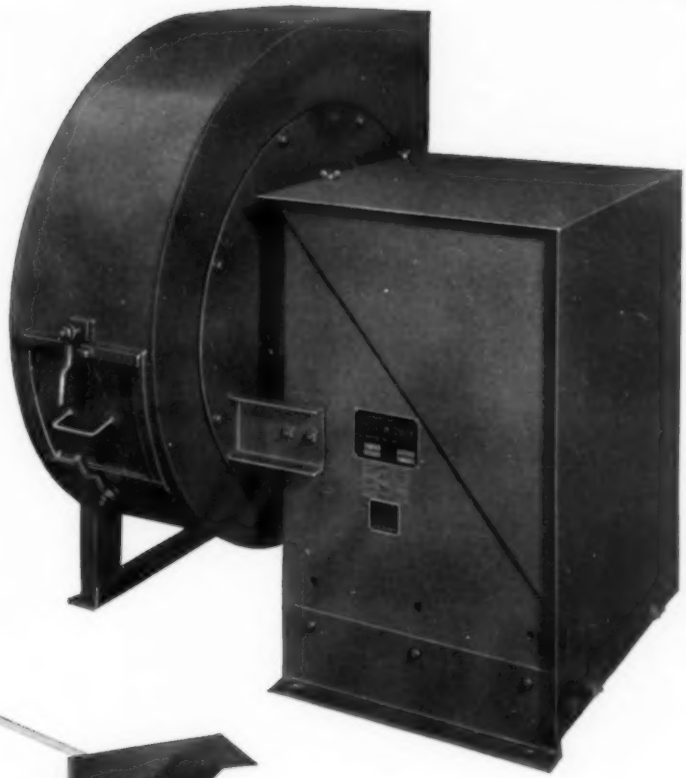
Fire-Tube and Water-Tube PACKAGED BOILERS
for STEAM or HOT WATER

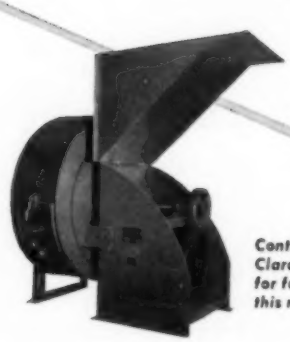
SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N. Y.

SUPERIOR PACKAGED BOILERS ®

CLARAGE

NEW... Packaged INDUSTRIAL FANS





Contact the nearest Clarage sales engineering office for full information on this new line of equipment.

Ready-to-run

NOW the highly regarded Type XL industrial fans have joined the expanding family of Clarage self-contained, packaged units.

Hinged cover completely encloses motor, drive, and bearings for weatherproof installation outdoors or for added safety on indoor applications.

These compact, rugged, economical units are available with either the open type wheel for handling materials or the high efficiency backplate wheel for light dusts and fumes.

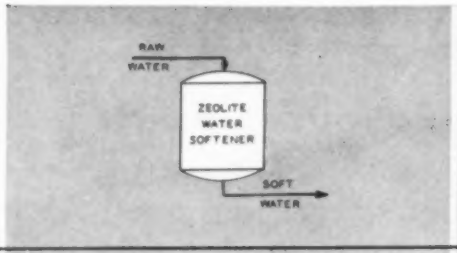
Dependable equipment for making air your servant

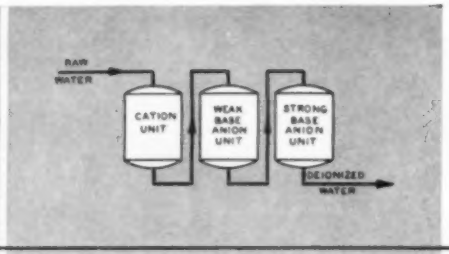
CLARAGE FAN COMPANY

Kalamazoo, Michigan

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

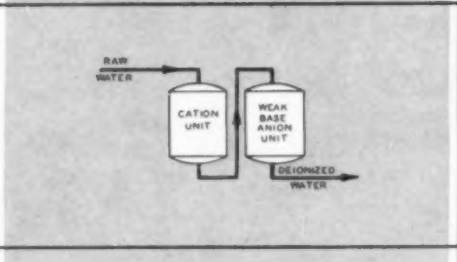
Delivers soft water by the simplest and most dependable method of softening water—the zeolite softener.

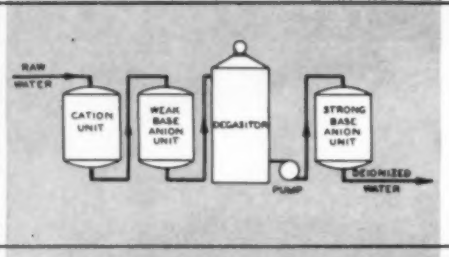




Delivers high quality CO_2 and silica free deionized water. Used to treat water of relatively low alkalinity.

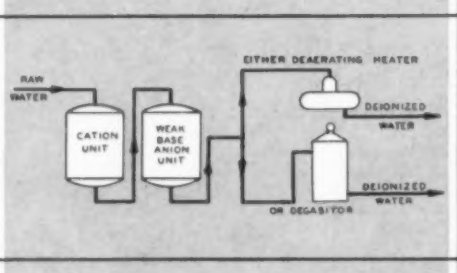
Delivers deionized water low in dissolved solids—suitable for many boiler and process applications.

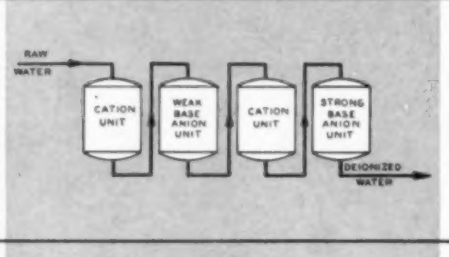




Delivers deionized water, free of CO_2 and silica. Very effectively used for waters of high alkalinity.

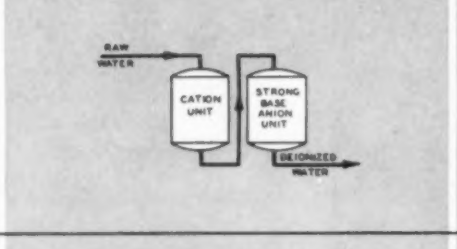
Delivers deionized water and eliminates CO_2 with either deaerating heater or degasitor.

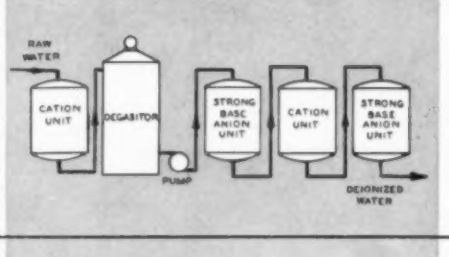




Delivers exceptionally high quality deionized water, free from silica and CO_2. Effectively used on waters of low alkalinity.

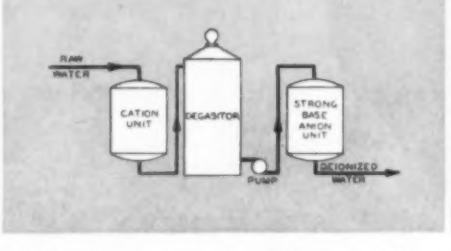
Delivers deionized water free from silica and CO_2. Used largely for waters of low alkalinity.

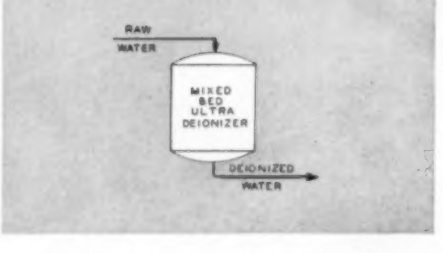




Delivers highest quality deionized water, free from silica and CO_2. Last two columns provide the "polishing" steps.

Delivers deionized water free from silica and CO_2. Usually built in large sizes for low cost CO_2 removal.





Delivers deionized water of highest known quality—free from silica and CO_2. Used alone and as "polishing" unit.

Yes, there is an Elgin ion exchanger that will exactly meet your needs . . .

Some of the modern methods we are using today are diagrammed above . . . and there are many combinations of these dictated by the variables in water supply and final use.

But whether your requirements can be met by a simple zeolite water softener—or whether you need the most highly "polished" water—this much is certain: The best and most economical solution to your problem must come from a firm like Elgin that offers *every* modern and authoritative approach.

Write for the Guide to Better Water Treatment — Bulletin 615

ELGIN SOFTENER CORPORATION

132 North Grove Avenue • Elgin, Illinois

Representatives in Principal Cities • In Canada: G. F. Sterne & Son Ltd., Brantford

ELGIN
WATER CONDITIONING
SINCE 1908

SOFTENERS • ION EXCHANGERS • FILTERS • DEIONIZERS • DEALKALIZERS • CLARIFIERS • DEGASITORS • DEAERATING HEATERS

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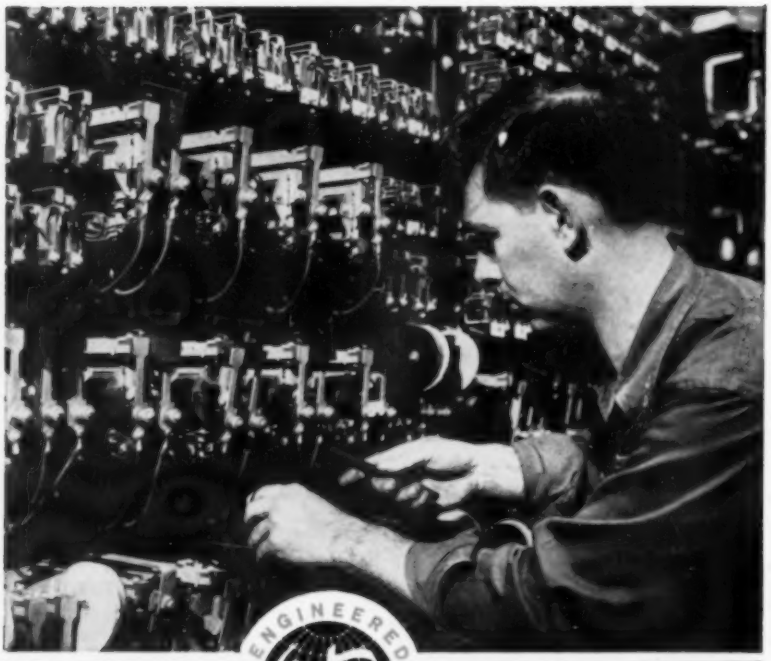
Otis

IS ELEVATOR MAINTENANCE COMPLEX?

YES! It is an organization task requiring an unusual combination of skills. Plus a wide knowledge of parts, assemblies, functions, replacement procedures, testing and adjusting. Plus the availability of original replacement parts. Plus immediate local service in emergencies.



freight ENGINEERED Otis MAINTENANCE elevators

OTIS ELEVATOR COMPANY • 260 ELEVENTH AVENUE • NEW YORK 1, N.Y.
OFFICES IN 297 CITIES ACROSS THE UNITED STATES AND CANADA

You : IS YOUR ELEVATOR MAINTENANCE COSTLY?

Form 1512 (6-53)

OTIS MAINTENANCE SURVEY AND ESTIMATE

OFFICE

BUILDING NAME

Location

City

OWNER State

Bill to

Location

City

CLASS EXAM. FREQ State

STARTING 19

NUMBER AND KIND OF ELEVATORS IN BUILDING:

Pass Frt. Serv. Hyd. S.W. D.W.

Type of Building No. of Apmts

Present Type of Service

Frozen Maintenance Estimating Rate @ $

Frozen Straight Time Labor Cost $

Current Straight Time Labor Cost $

Current Metals and Metal Prod. Index Month of $

ABOVE RATES ARE FOR OFFICE - L. R.

This Estimate Covers Machines, Kind	Size & Type Machine	Machine Location	Capacity	Speed	Rise Ft. In.	No. Stops	No. Openings
1:1 ☐ SWT ☐ 2:1 ☐ DWT ☐	Type of Controller 1, 2 Spd.	Type of Operation	Date Installed	Voltage A.C. or D.C.		Machine Number	

ROPES	Hoist & Dwnt Cwt.	Car Cwt.	Comp.	Tiller	Gov
No. & Size					
Used Life (mos.)					
Add. Est. Life(mos.)					
Base					
Rise					
Sub Total					
Life Var. %					
TOTAL					

GRAND TOTAL FOR ONE ELEV. $ FOR ELEVS. $

Total No. Items	APPLIANCES - ALL ELEVATORS	Make	Cond.	Cost
	Selector & Drive			
	Hoistway Leveling Cams & Switches			
	Frt. Type Operators, Type No. Doors Master ☐ Motorized ☐			
	Operators, Pass. Type No. Open Electric ☐ Pneu. ☐			
	Electronic Detector			
	Door Closers, Rison ☐ Spring Hyd. ☐			
	Interlocks, Elec. ☐ Freight Gate ☐ Bar ☐			
	Car Gates, Solid ☐ Safety ☐ Collapsing ☐			
	Frt. Gates, Wd.☐ Met.☐ Ft. In. Wide			
	Hoistway Doors, Swing ☐ Sliding ☐			
	Door Hangers, 1 ☐ 2 ☐ Speed C/O ☐			OMIT
	Annun., Target ☐ Light ☐ No. Ind.			
	Operators Signal			
	Hall Buttons			
	Dial Ind's, Roto ☐ Cir. Illum. ☐ Mech. ☐			
	Signal Drive Mechanism			
	Hall Lanterns			
	Hall Position Indicator (Multi-Light)			
	Car Position Indicator (Multi-Light)			
	Starters Indicator Panel			
	Waiting Pass. Indicator, No. Floors			
	Starters Contr. Panel w/ Disp. ☐ w/o ☐			
	Two Car Spacing			
	Signs, Directional ☐ This Car Up ☐			
	Rotary Converters			
	Telephones or Call Bells			
	Fandoliers or Blowers			
	Car Lights, Std. ☐ L			

TOTAL BOOK COST OF

Minus 25% For Semi-Monthly

TOTAL COST @ $1.00 PE

SEE R

SPECIAL LABOR HOURS - All Elevators

	Service	Repair
Overtime Callbacks		xxx
Overtime Examination and/or Repairs		
Standby Labor		xxx
Traveling Time		
Miscellaneous		
TOTAL SPECIAL LABOR (HOURS)		

MACHINE BASE COST - One Elevator Only

Service Hrs. @ $1.00 Per Hour Labor Cost

Repair Hrs. @ $1.00 Per Hour Labor Cost

Material Cost

Machine Base Cost for One Elev. @ $1.00 per Hour

Service Hrs. for Items 2 & 4 = 44% Prime Cost + $1.00

Repair Hrs. for Items 2 & 4 = 11% Prime Cost + $1.00

Repair Hrs. for Ropes = 25% Item 5 + $1.00

SUMMARY - All Elevators

	Serv. Hours	Rep. Hours
1. Machine Base Co		
2. Cost of All Appl		
3. Total - Cost of		
4. Age Adj.	xx	xx
5. Cost of All Rop		
6. Tot. M. & L. Co	xx	
7. Ser. Hrs. (6)		xx
Rep. Hrs. (6)	xx	xx
8. Total Special Lab		
9. Total		
10.		
11.		

HOW DO YOUR COSTS compare with professional elevator maintenance? OTIS can figure your costs accurately. We can tell you why it will pay you to have OTIS keep your freight elevators running like new. We can reduce your shutdown costs. We can eliminate unexpected repair bills. We can hold your costs to one fixed monthly charge. Why not ask your local OTIS man for a FREE Maintenance Survey and Estimate. Then let the figures decide!

Facts and Trends

For more information on any of the following items—
Write the editors of SOUTHERN POWER & INDUSTRY
1760 Peachtree Road, N.W., Atlanta 9, Ga.

AUGUST, 1961

◆ COSTS OF NUCLEAR POWER—Costs must be cut in research, development, engineering, and production if nuclear power is to become economically competitive with fossil-fuel power in the next ten years, concludes an Atomic Energy Commission study of the costs of nuclear power from stationary plants designed primarily for generating electricity.

Factors discussed include costs for research and development, construction, fuel-cycle operation, and overall operation and maintenance.Only plants now in operation and those being built or designated for construction at an early date were considered in the study. U. S. Atomic Energy Commission. January 1961, 40 pages. Order TID-8531 from OTS, U. S. Department of Commerce, Washington 25, D. C., 50 cents.

◆ EMPLOYMENT ABROAD—Don't look for jobs abroad unless you can accept hardships, make sacrifices, and take pay somewhat lower than that you could get in the United States. Very few positions have glamour, comfort, and high pay, the Chamber of Commerce of the United States said. "Most such jobs mean hard work, discomfort, and sacrifice."

Nevertheless, contrary to popular belief, the Chamber says, more people are looking for jobs in foreign countries than there are openings. In a new revision of its report "Employment Abroad, Facts and Fallacies," the Chamber punctures some popular myths, advises how to look for work outside the United States, and gives some facts on jobs abroad. For a copy send 25 cents to the Foreign Commerce Department, Chamber of Commerce of the United States, Washington 6, D. C.

◆ PLASTIC PANELS—A reprint of Commercial Standard CS214-57, "Glass-Fiber Reinforced Polyester Corrugated Structural Plastics Panels" covers material previously contained in the original edition of CS214-57 as well as material incorporated from Amendment TS-5520 which became effective January 16, 1961.

This edition reflects developments within the industry and provides dimensional tolerances, intrinsic quality requirements, and methods of test for two types of corrugated plastics panels of four geometrical configurations. It also provides a means of identification of products through use of hallmarks. Copies may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., price 10 cents.

◆ AIR POLLUTION CONTROL—A new industry is in the making as business and public officials push plans to control polluted air enveloping the nation's metropolitan areas, according to the latest Business Conditions Bulletin of the Alexander Hamilton Institute.

Already 106 cities and 15 states have full-time administrative staffs organizing anti-smog programs. This is obviously only a start in a nation with 6,000 communities known to have contaminated atmospheres. Control equipment, as an industry, has a great future of great proportions. Other markets for abatement devices include the steel, chemical, and oil refining industries and the gas and electric utilities. These industries are already spending as much as $150 million a year on pollution control.

◆ HOMOPOLAR GENERATOR—Homopolar direct generators, discarded in the past because of their very low voltage and efficiency, have become quite popular because of present demands for very high currents at very low voltage. Such machines have been built to supply 250,000 to 300,000 amperes to electromagnetic pumps which are used to circulate liquid metals within nuclear reactors and to supply high currents for welding apparatus and for large magnets such as can be found in synchro-cyclotrons.

Engineers attending the summer meeting of AIEE were told that a new and efficient type of generator has been designed, with the principal advantage of supplying current and voltage equal to an ordinary homopolar generator of twice the size. The new kind of generator has no stator cylinder and the rotor is made up of two cylinders rotating in opposite directions.

◆ MOST ELECTRIFIED RIVER—The construction of Cowans Ford hydroelectric project in 1965 "will for all practical purposes" complete development of the Catawba River, which has been called "the most electrified river in the world," it was reported at a recent AIEE meeting. The Cowans Ford project was the subject of a paper by J. Q. Wray, Jr. of Duke Power Company.

The Catawba, in the southern part of North Carolina and northern South Carolina, has been the site of hydroelectric projects since the "old Catawba plant" was constructed in 1904 to furnish electricity for a 300 horsepower motor in the Victoria Cotton Mill at Rock Hill, S. C. Today, there are 12 plants along a 220 mile stretch of the river utilizing 779 feet of fall, out of a total of 1,052. The Cowan's Ford project, with a head of 112.5 feet, will increase the developed head to 893 feet and essentially complete development of the river.

◆ AUTOMATIC POWER PLANTS—Electric power plants of the near future will rely completely on automatic control, with significant savings to utilities. This prediction for the future was made by J. K. Dillard and J. L. Everett of the Philadelphia Electric Company in a paper presented at a recent meeting of ASME.

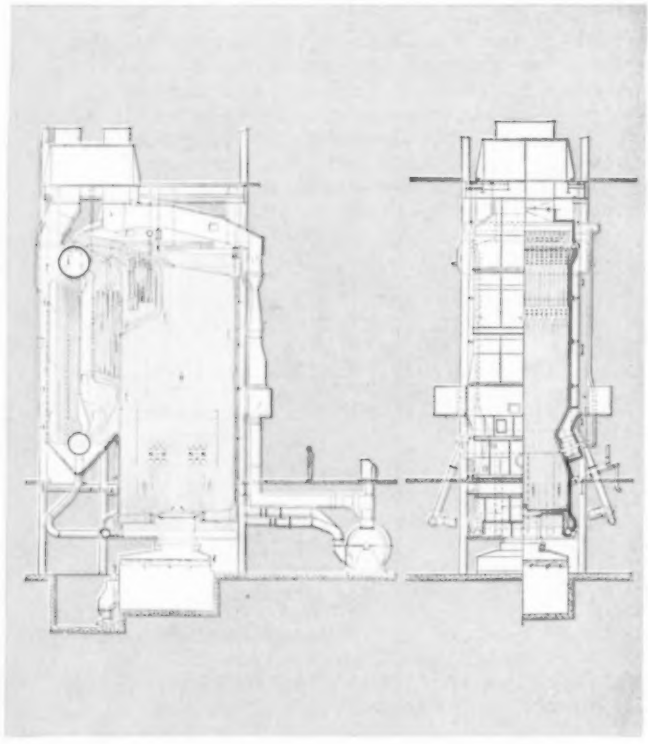
"While heat rate and reliability improvement are certainly factors in justifying automation, the real economic justification lies in two places. One is in the elimination of manual control apparatus. The other is in the reduction of the cost of generation apparatus when it is designed for strictly automatic operation. This implies that the power plant of the future will have provision for automatic control and rely on it completely. The resulting savings should be significant.

◆ PIPE FRICTION MANUAL—Copyright 1961, Third Edition, Size 8 1/2 x 11 inches: A bound, soft cover book, 90 pages, price $2.00. Published by: The Hydraulic Institute, 122 East 42nd Street, New York 17, N. Y. The material in this Manual is an extension and rearrangement of the pipe friction data contained in the previous edition. The data are based on the latest information available. The form of the Manual follows a pattern de-

(Continued on page 10)

For the RIGHT Boiler and Firing Combination

Riley Stoker Corporation offers one of the broadest product lines in the boiler industry, particularly in cases where special boiler design and fuel burning arrangements

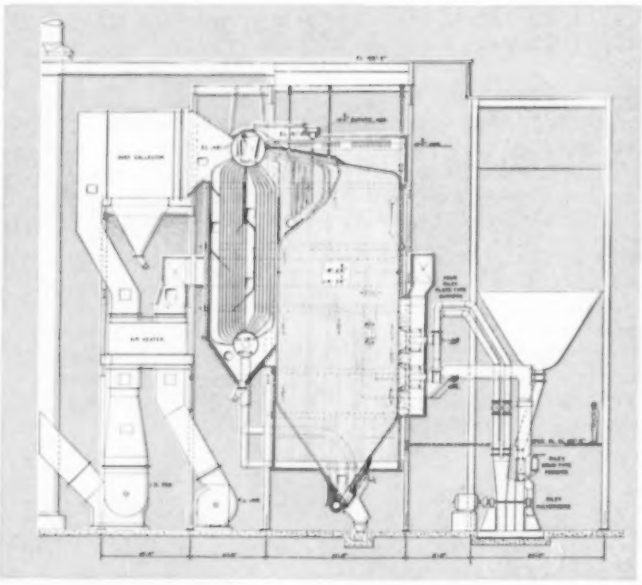


Opposed Firing In The Riley TURBO FURNACE Boiler With Riley Directional Flame Burners and Riley Pulverizers.

Electrical Equipment Manufacturer
Chicago, Illinois

Boiler Steam Capacity — 150,000 lbs/hr
Operating Pressure — 950 psig
Steam Temperature — 835 F.
Efficiency — 87.5%

The Turbo Furnace Boiler efficiently utilizes furnace waterwall surfaces providing rapid and uniform natural water and steam circulation. Uniform furnace gas distribution produces minimum variations in superheater temperatures. Almost entire absence of furnace wall deposits eliminates need for wall blowers. Carbon loss and flyash problems are kept to a minimum. The Turbo Furnace boiler can be fired by coal, oil or gas or any combination of the three and will maintain steam temperature over wide load ranges. The Turbo Furnace boiler with burners on one level arranged for opposed firing is easy to supervise and is well suited for automatic operation. This design is furnished in all capacities up to the largest central station reheat type units.



Furnace Wall Firing With Riley Flare Type Burners and Riley Pulverizers

Emery Industries, St. Bernard, Ohio

Boiler Steam Capacity — 200,000 lbs/hr
Operating Pressure — 350 psig
Steam Temperature — 550 F.
Efficiency — 87.3%

This Riley boiler design incorporates within its furnace wall circulation system the patented Riley Single Header Hopper which reduces overall height of structure and permits a higher capacity in a restricted area. By incorporating the hopper with the furnace expense of a separate hopper and its maintenance is eliminated. Riley Flare Type Burners used with this design burn coal, oil or gas separately or in combination. The design may be adapted to any steam capacity up to the largest central station reheat type unit.

For Complete Information About Riley Products Write—RILEY STOKER CORPORATION, WORCESTER, MASS.
Sales Offices: Boston, Charlotte, Chicago, Cincinnati, Cleveland, Denver, Detroit, Honolulu, Houston, Jacksonville, Kansas City, Los Angeles, Milwaukee, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Salt Lake City, San Francisco, St. Louis, St. Paul, Seattle, Syracuse.

BUY RILEY ALL THE WAY!

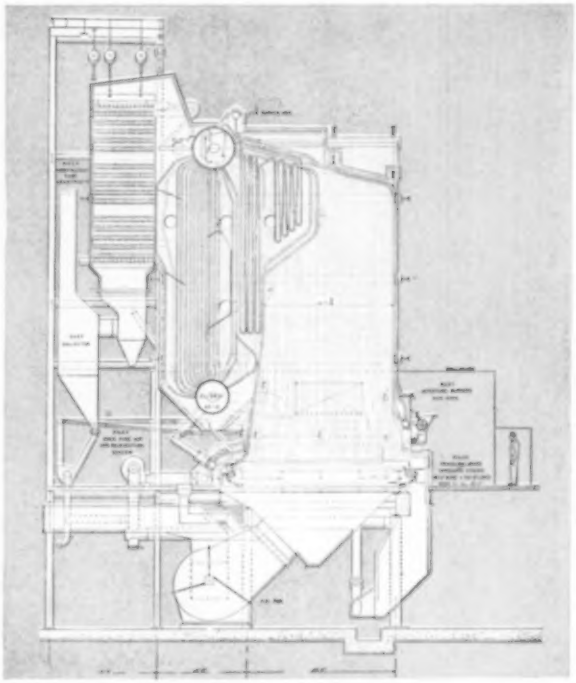
are required. When you buy a Riley Boiler complete with Riley Fuel Burning Equipment, you do so under a single contract with undivided responsibility

Spreader Stoker Firing With Riley Traveling Grate and Model "D" Feeders

Deere & Company, Moline, Illinois

Boiler Steam Capacity — 135,000 lbs/hr
Operating Pressure — 650 psig
Steam Temperature — 750 F.
Traveling Grate — 16′ x 20′
Efficiency — 87%

Unusual here is that this is the first successful application of pressure firing with a spreader stoker. The unit is also provided with Riley Intertube Gas Burners. The Riley Spreader Stoker is used extensively to burn a wide range of bituminous coals, lignite, wood refuse, bagasse and other cellulose materials. Riley Spreader Stokers are being supplied for steam capacities as high as 650,000 lbs/hr and are also available with stationary and oscillating grates.

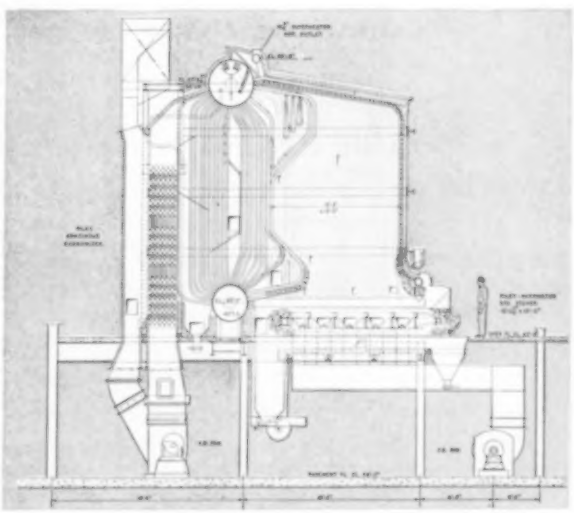


Overfeed Firing With Riley Harrington Traveling Grate

Owens-Illinois Glass Co., Bridgeton, New Jersey

Boiler Steam Capacity — 70,000 lbs/hr
Operating Pressure — 200 psig
Steam Temperature — 460 F.
Stoker is 13′ wide by 15′ 2½″ long
Efficiency — 84.4%

The Riley-Harrington Traveling Grate Stoker efficiently utilizes fuels that have a wide range of coking, caking and ash fusion characteristics; also low grade fuels such as coke breeze, sub-bituminous and fine sizes of anthracite coals and lignite. Normally used with boilers from 50,000 to 250,000 lbs/hr capacities. Recent successful adaptions of Riley-Harrington stokers are for metallurgical coke production and incinerators.



A careful survey of your plant by a qualified consulting engineer could show ways of making substantial savings in power costs.

RILEY
STEAM GENERATING & FUEL BURNING EQUIPMENT

veloped as the result of numerous suggestions from users of the earlier publications.

The Manual features a section demonstrating the mathematical calculations used in the construction of later charts. This is supplemented by complete tables of friction loss for water in feet per one hundred feet of pipe. Given also are tables of resistance coefficients for valves and fittings. Of particular utility are numerous examples showing actual mathematical solutions.

◆ CHEAPER ALLOY—Development of a new high strength and low cost copper-nickel alloy, named Cufenloy-40, has been announced by the Phelps Dodge Copper Products Corporation. The new alloy initially is intended for use in condenser tubes for special applications in the power industry but officials say that use in other fields are under study.

Although its properties are practically identical with those of nickel alloys, the cost of the new product is approximately one-half their price. At a saving of around one dollar a pound, the substitution of Cufenloy-40 becomes significant when it is realized that from 50 to 100 tons of condenser tubes are used in the feedwater heaters of large modern plants being constructed by utility companies.

◆ MAGNETIC BEARING—The 30-year life expectancy of the watthour meter may be extended by use of a magnetic bearing, first used more than half a century ago. The bearing was described by D. F. Wright, Westinghouse Electric Corporation, Raleigh, N. C., in a paper prepared for an instrument symposium of AIEE.

Advantages of the new barium ferrite magnet include relatively low cost, low weight and long term stability, plus a high coercive force of 1800 oersteds or almost double that of the best alnicos. The barium ferrite permanent magnetic offers the instrument field a low cost, stable, maintenance-free bearing. With the advent of increasing loads and longer intervals between tests such a bearing becomes an economic necessity.

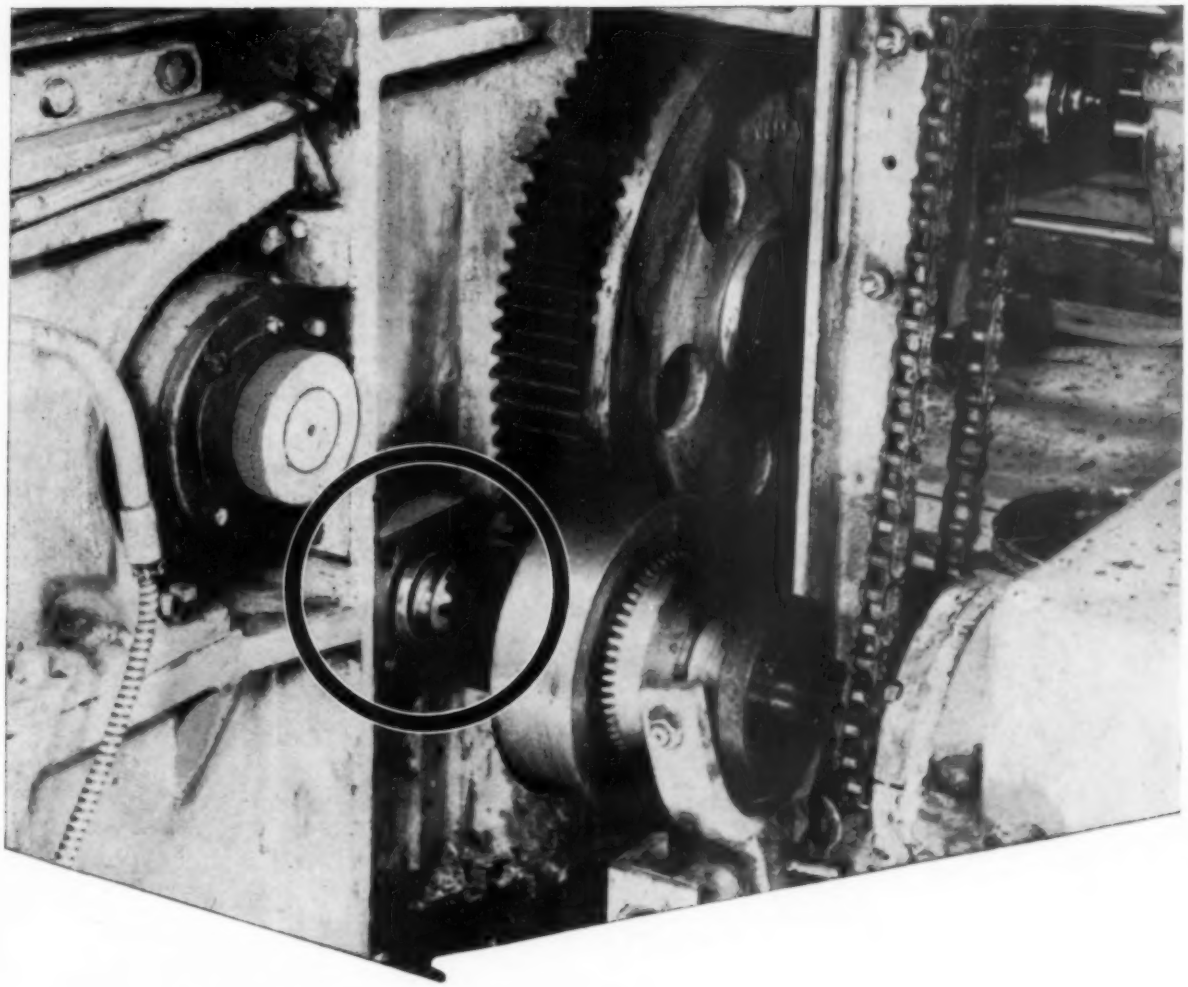
◆ SOUTHERN COMPACT—The nation's first statutory interstate nuclear agreement became effective recently when Governor Farris Bryant signed a bill making Florida the seventh state to enact the Southern Interstate Nuclear Compact. Florida joined the signatory states of Arkansas, Kentucky, Louisiana, Tennessee, Texas, and South Carolina in establishing the minimum number required to bring the compact into effect and create the Southern Interstate Nuclear Board.

The compact offers the means by which the Southern States may concert their energies and talents, both public and private, in developing the atom for optimum peaceful applications in industry, agriculture, medicine, and research. All of the 16 states of the Southern Governors' Conference are eligible for membership.

◆ WHY OH WHY?—A spokesman for the Chamber of Commerce of the United States said that the Kennedy Administration's tax credit proposal for business is "actually a subsidy, a handout on preferential basis. The proposed tax credit would create more problems and difficulties than it would solve."

Joel Barlow, a specialist in tax law, made the charge. He is a partner in the Washington law firm of Covington & Burling, and

(Continued on page 12)



Dixie Bearings engineers will upgrade your equipment - eliminate early bearing failures!

The original bearings on the pinion drive of this corrugating machine had an average life of only three months. Our customer had been advised that only a complete engineering change of machine drive would solve the problem.

Our engineers refused to accept this verdict and after much research found a standard, double row, roller bearing that, plus a standard adaptor, would fill all dimension requirements and give the radial capacity necessary for trouble-free operation.

We solved this bearing problem (as we have solved countless others) because we are authorized distributors for all nationally-known makes of bearings. We know the characteristics of each type of bearing and our recommendations are backed by many years of experience.

When you need bearings for any purpose, call the branch nearest you. We have the most extensive, the most complete stock of bearings and bearing accessories in the world ready to serve you.

Providing bearing service in the South

DIXIE BEARINGS, INC.

ARKANSAS: Little Rock • **FLORIDA:** Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville • **LOUISIANA:** Baton Rouge New Orleans • **N. CAROLINA:** Asheville • Charlotte • Greensboro • **S. CAROLINA:** Greenville • **TENNESSEE:** Chattanooga • Kingsport Knoxville • Memphis • Nashville • **VIRGINIA:** Norfolk • Richmond • Roanoke

a member of the National Chamber's Taxation Committee. Mr. Barlow called the U. S. income tax rates the highest in the world and the depreciation laws the worst in any industrial nation. High income rates reduce the chance to save and invest in job and goods producing machinery, Mr. Barlow said. Old-fashioned depreciation rates make it possible for businesses to replace machinery and keep on being low cost producers as they once were.

◆ PLASTIC PIPE STANDARDS—A new edition of Commercial Standard 228-61, which includes plastic sewer pipe in 8-, 10-, and 12-inch diameters, has been published by the U. S. Department of Commerce. The new Standard supersedes Commercial Standard 228-60. It provides a recognized specification for municipalities, engineers and architects in specifying plastic sewer pipe for mains, 8-inches in diameter and larger.

Copies of amended Commercial Standard on Plastic Sewer Pipes are available now from the Evanite Plastic Co., Carrollton, Ohio. Within a few months, the new Commercial Standard 228-61 can be ordered from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

. . . . . REPRINTS AVAILABLE . . . . . .

Write the editors of SPI for small quantities of the following at no charge.

- SEGCO 1,000,000 KW PLANT—A 16-page folder describing this large new Alabama plant, serving Alabama Power Co. and Georgia Power Co., is a combination of two technical articles from SPI's September and November issues.
- ORIFICE METER INSTALLATIONS—Tells what the plant man needs to know about installation to get accurate, dependable service.
- INSPECTION REPORTS—Tells how the station chemist can maintain information on the condition of boilers, cooling towers, condensers, heat exchangers, tanks and softeners. Actual inspection sheets are presented.
- ELECTRICAL DISTRIBUTION FOR LARGE PLANT—An 8-page special report prepared jointly by Director of Facilities, the Consultants, and the Contractor — describing plans and installation of all electrical services for new plant of Texas Instruments Inc., Dallas, Texas.
- HOW EPOXY CAN SERVE YOU—4 pages. Tells exactly how 10 separate repair jobs were handled and describes several epoxy mixes that are good for maintenance jobs.
- MATERIAL HANDLING EQUIPMENT—An 8-page special booklet prepared by the editors of SPI from equipment manufacturers' releases. Lists 69 catalogs and describes 22 items of new equipment.
- THERMAL INSULATION DIRECTORY:
  Tells where to get service and technical data.....6 pages
- WATER TREATMENT DIRECTORY:
  Tells where to get service and technical data.....12 pages
- AIR & GAS CLEANING DIRECTORY:
  Tells where to get service and technical data.....16 pages
- COMBINED GAS-STEAM CYCLE PERFORMANCE:
  First year report on new plant, West Texas Utilities Co.....6 pages

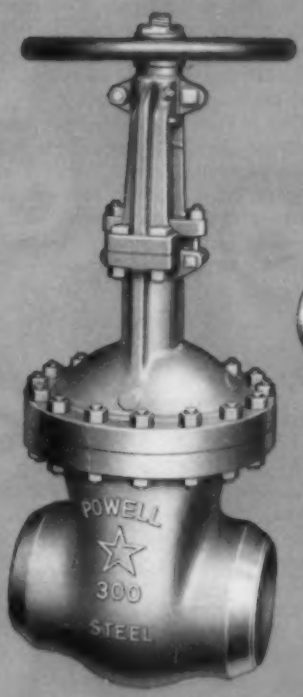
YOU CAN COUNT ON POWELL VALVES

Performance proves it, year after year—you can count on Powell Valves to help you solve the toughest flow control problems of temperature and pressure found in power plants today.

This truly dependable performance results from many things—among them Powell's engineering know-how, accumulated during 115 years of valve manufacture, and the consistent use of quality materials, quality controlled.

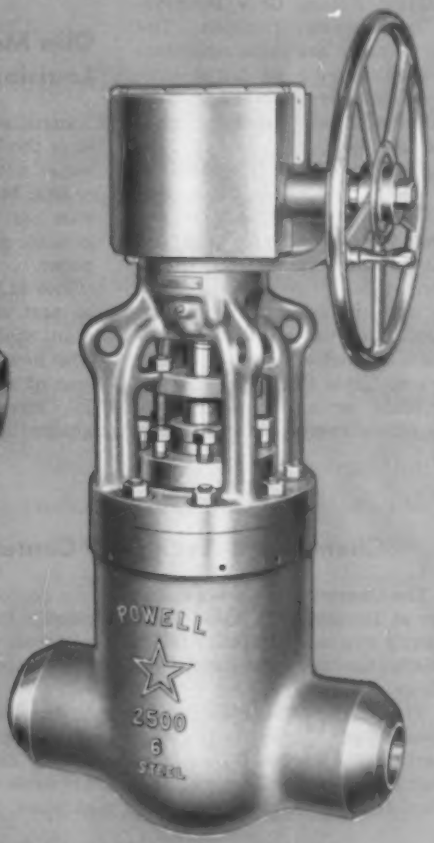
Then, too, you can count on getting the Powell Valve you need, when you need it. That's because Powell maintains a network of distributors backed up by factory inventories, warehoused "ready to go."

Get the full story from your nearby Powell Valve Distributor, or write us direct . . . The Wm. Powell Company, Cincinnati 22, Ohio.



300-pound Steel Gate Valve—Fig. 3003 WE. Bolted flanged yoke-bonnet. Outside screw rising stem. Interchangeable solid or split wedges, renewable seats. Sizes, 1" through 30".

600-pound Steel Horizontal Swing Check Valve—Fig. 6061 WE. Bolted cap, renewable seat and disc. Has full flow area when valve is fully open.



2500-pound Steel Pressure Seal Gate Valve—Fig. 125003 WE. Enclosed bevel gears facilitate operation. Valves can also be supplied with spur gearing or motor operators for remote control.

115th year of manufacturing industrial valves for the free world

POWELL STEEL VALVES

THE WM. POWELL COMPANY CINCINNATI 22, OHIO

the SOUTH—SOUTHWEST

more power . . . more plants . . . more money

Tampa Gets $2 Million Transformer Factory

A $2 million transformer manufacturing plant employing 175 to 200 persons will be constructed on a 12-acre site in Tampa Industrial Park by **McGraw Edison Co.'s** Pennsylvania Transformer Division. The plant will be a complete manufacturing facility with an initial estimated annual payroll of $1 million. Construction is scheduled to begin late this summer.

Transformers of the type used on utility poles will be initially produced, but long range plans call for doubling the plant's size and expanding production into the heavy transformer field.

Basic raw material to be used in construction of the electrical transformers is magnet wire, made locally by General Cable Co.

The plant primarily will serve Florida utility companies, but transformers also will be shipped from Tampa's deep-water port to New Orleans and Houston. It will be the first McGraw Edison facility in Florida. The corporation has its home offices in Elgin, Ill. and has over 50 plants throughout the country.

Olin Mathieson Modernizes Louisiana Packaging Plant

Installation of a bark-burning boiler at the West Monroe, La., pulp and paper mill of the Packaging Division of **Olin Mathieson Chemical Corporation** has been announced by B. E. Brooks, product manager, pulp and paper.

The $1,500,000 boiler was installed as part of a $12,000,000 program of plant modernization by the division. The new boiler permits the conversion of waste bark into electric energy, increasing the plant's electric generating capacity by approximately 10 per cent. In the past, the bark was burned with no heat recovery.

Mr. Brooks explained that after the bark is removed from the logs in a debarker, it is carried into the furnace of the boiler. Steam from the boiler is used to drive turbine generators, creating electrical power.

The boiler was supplied by Riley Stoker Corporation, Worcester, Mass. Ford, Bacon & Davis Construction Corporation of Monroe and New York handled the engineering and installation. Ebasco Services, Inc. was engineering consultant.

Olin's Packaging Division manufactures kraft paper and board, shipping containers, multiwall sacks, grocery bags, folding cartons, cellophane and polyethylene. It also produces cigarette paper, lightweight printing papers and lumber.

Chemstrand Technical Center—Alabama

The Chemstrand Corporation recently dedicated its Technical Center at Decatur, Alabama. This complex is the newest of the company's extensive facilities for the application of science, engineering and technology to wider use and improvement of its chemical textile fibers.

The Center houses the Applications Research and Service Department of the Marketing Division; Engineering and Development Department, and the Corporate Purchasing Department. It includes textile laboratories, a commercial-scale dyehouse, a tire cord laboratory, engineering facilities, and a pilot plant.

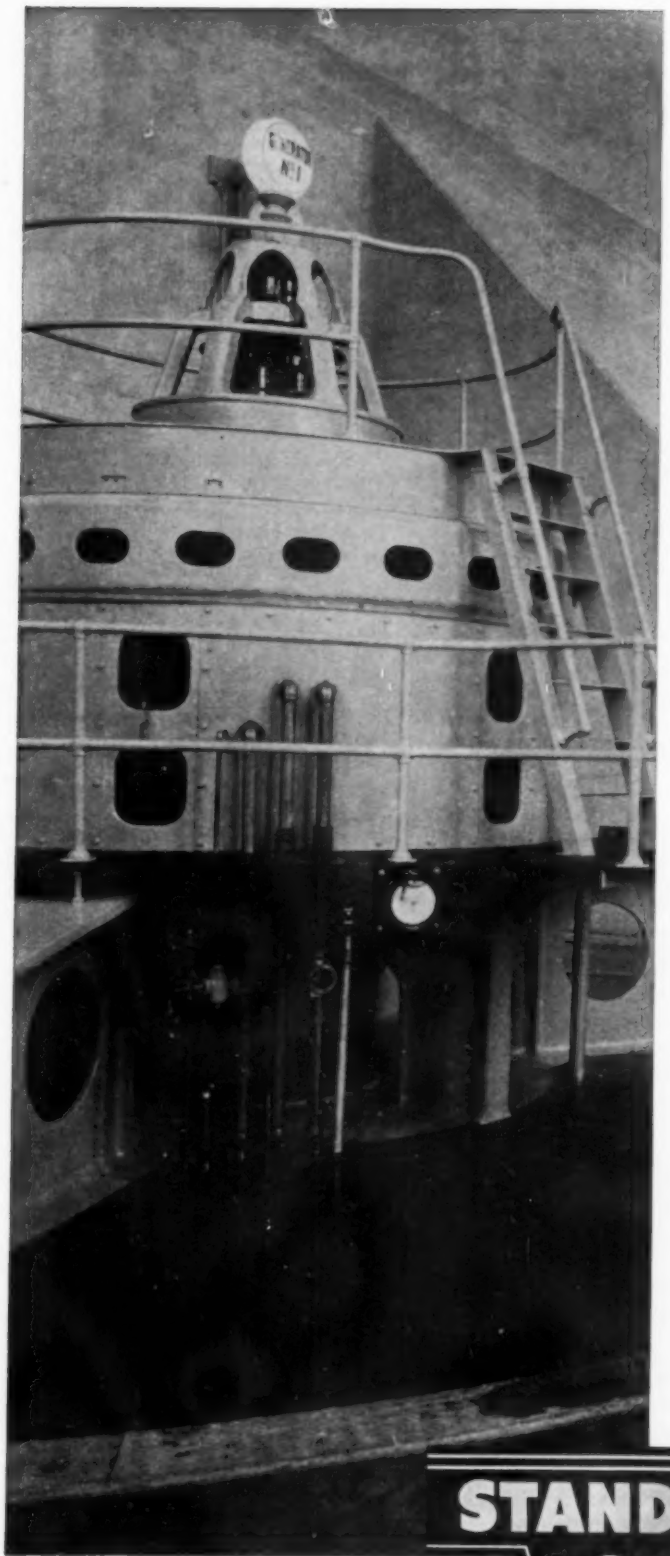
TCI Cold Reduction Mill—Alabama

A new high-speed 52-inch cold reduction mill at the Fairfield (Alabama) Tin Mill of Tennessee Coal & Iron Division, U. S. Steel Corporation, will be equipped with Dravo-DeLaval continuous circulating roll coolant systems having a total capacity of 9900 gpm.

The six-stand, four-high cold reduction mill is being built by Blaw-Knox Company, who awarded the contract for the coolant system to Dravo Corporation.

The installation, one of the largest of its type ever designed, will actually consist of two separate systems, one of 4200-gpm capacity for three of the stands, a second of 5700-gpm capacity for the remaining three stands. It will be designed to remove the heat created as the mill turns out cold reduced coils at rates in excess of a mile and a quarter per minute.

Vertical cylindrical tanks of 15,000-gallon capacity will hold the rolling solution used as the coolant. Agitators and steam heating coils in the reservoirs will be used to maintain the condition of the solution.



right at scene of action

Continuous action in power equipment means friction, heat and wear —if the *right* lubricants aren't at the *right* places.

For 74 years STANDARD OIL has been *right* at the scene of action with *tailored-to-the-job* lubricants. These valuable years of experience in helping to solve a wide variety of industry's lubricating problems, plus the unexcelled resources for research behind STANDARD OIL Lubricants, are all available to you whenever you have an unusual problem in lubrication.

Whatever your lubrication requirements, your STANDARD OIL representative is able and ready to assist you in getting the *right* lubricant on the job. Call him today.

STANDARD OIL LUBRICANTS

STANDARD OIL COMPANY
(KENTUCKY)

For more information, Use Reply Card—Page 69

FUTURE EVENTS of Engineering Interest

Aug. 14-17: 9th Annual Short Course in Fundamentals of Occupational Safety, Louisiana State University, Baton Rouge, La. Fred H. Fenn, Dean, College of Engineering.

Aug. 28-Sept. 1: Second International Heat Transfer Conference, University of Colorado, Boulder, Colo. Sec'y, ASME, 29 W. 39th St., New York 18, N. Y.

Sept. 24-27: ASME-AIEE National Power Conference, St. Francis Hotel, San Francisco, Calif. Sec'y, ASME, 29 W. 39th St., New York.

Sept. 24-27: ASME Petroleum Mechanical Engineering Conference, Muehlebach Hotel, Kansas City, Mo. Sec'y, ASME, 29 W. 39th St., New York 18, N. Y.

Sept. 25-28: Industrial Building Exposition & Congress, New York Coliseum. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Oct. 3-4: Coal Technology Conference, Dinkler-Tutwiler Hotel, Birmingham, Ala. Southern Research Institute, 2000 Ninth Ave. South, Birmingham.

Oct. 4-6 ASME Process Industries Conference, Shamrock Hilton Hotel, Houston, Texas. Sec'y, ASME, 29 W. 39th St., New York 18, N. Y.

Oct. 5-7: AIME-ASME Joint Solid Fuels Conference, Dinkler-Tutwiler Hotel, Birmingham, Ala. Sec'y, ASME, 29 W. 39th St., New York 18, N. Y.

Oct. 9-11: 17th Annual National Electronics Conference & Exhibition, International Amphitheatre and Hotel Sherman, Chicago, Ill. John S. Powers, Exhibits Chm., 228 N. LaSalle St., Chicago 1.

Oct. 24-27: 1961 Conference & Exhibition, South Central Region, NACE, Shamrock Hotel, Houston, Texas. T. J. Hull, Exec. Sec'y, NACE, 1061 M&M Bldg., Houston.

Nov. 27-Dec. 1: 28th Exposition of Chemical Industries, New York Coliseum. E. K. Stevens, International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Nov. 27-Dec. 1: Regional Conference, Southeast Region, NACE, Key Biscayne Hotel, Miami, Fla. T. J. Hull, Exec. Sec'y, NACE, Houston.

Coal Technology Conference Southern Research Institute

Technological frontiers which offer "brighter days" for the troubled coal industry will be explored at a nation-wide meeting in Birmingham, Ala., October 3-4.

The theme of this year's conference, the fifth of its kind sponsored by **Southern Research Institute,** will be "Coal's New Horizons." Industrialists from every section of the nation are expected to attend.

In announcing the meeting, SRI Chairman Thomas W. Martin, who is also chairman of the board of Alabama Power Co., pointed out that the coal industry, which has been in a long-term decline, is striving to regain a market of more than 100 million tons a year lost with the disappearance of the steam locomotive.

"Home heating is another major market that has been largely lost to oil and natural gas," Mr. Martin said, "and petroleum chemicals are more and more replacing coal chemicals for other uses. But coal men have now turned to technology to help them find new markets and perhaps regain some of those lost."

Subjects to be probed during the two-day session include coal versus atomic energy as a source of power, the case for electrification of railroads, the coal supply-demand situation, and the future for coal gas.

New developments in coal-burning gas turbines, pipe lines for transporting coal, coal chemicals, and underground gasification will also be discussed.

T. Reed Scollon, chief of the Division of Bituminous Coal, Bureau of Mines, is on the program to discuss the basic supply-demand situation, consumption rates, and recoverable reserves.

Glenn Warren, who retired recently as vice-president and general manager of General Electric's turbine division, has been invited to explain recent accomplishments in the coal-burning gas turbine field.

Banquet speaker is Philip Sporn, president of American Electric Power Company, who will evaluate atomic energy's threat to coal as a source of electrical power.

John W. Barriger, president of The Pittsburgh & Lake Erie Railroad Co., will discuss electrification of the railroads. Such an increase in the demand for electricity would lead to expanded markets for coal.

A vice-president of Peabody Coal Company, S. L. Jewell, will analyze problems of coal transportation; and Martin A. Elliott, director of the Institute of Gas Technology, will discuss the future of (high Btu) coal gas.

New developments in coal chemicals is the topic of F. L. Byrom, president of the Koppers Company. Increased productivity through technology is the thesis of a talk by W. L. Wearly, president of Joy Manufacturing Company.

Wilson M. Laird, state geologist and head of the department of geology, University of North Dakota, will discuss the future role of lignite. George A. Lamb, director of the Office of Coal Research, will be a featured speaker the second day.

The AIME-ASME Joint Solid Fuels Conference has been scheduled for October 5-7, immediately following the SRI meeting. Both conferences will deal with coal and both will be held at the Dinkler-Tutwiler Hotel in Birmingham.

New Sodium Silicate Plant for Georgia

Chemical Products Corporation has started construction of a new plant at Cartersville, Georgia, for the manufacture of a line of sodium silicates. Initial production will include most of the commonly used solution grades, one anhydrous glass and sodium metasilicate pentahydrate. Completion of the plant is expected by mid-October 1961 with full scale production following shortly thereafter.

The new plant is being built adjacent to the company's existing barium chemicals facility.

Westinghouse Controls for Republic Steel—Alabama

A 134-inch reversing universal plate mill at **Republic Steel Corporation's** Gadsden, Ala., works combines in-line process computer control with punched card programming. The mill programs rolling schedules up to 15 passes by a Westinghouse Prodac control system similar to the six now functioning in domestic steel or aluminum plants. The computer is a digital system specifically developed for industrial in-line application by engineers of the Westinghouse Electric Corporation's systems control department.

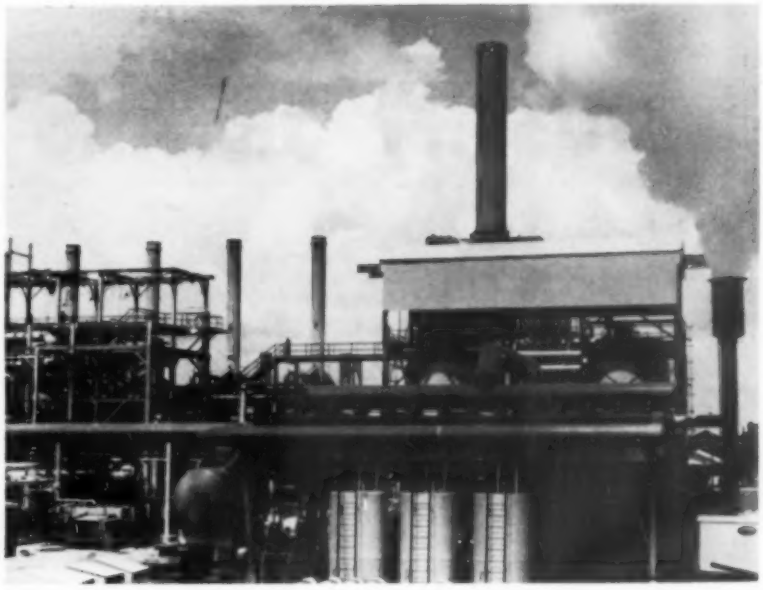
The mill control system is the first to incorporate a digital-type computer into the Prodac automatic control system. The computer monitors roll pressure gauge and X-ray thickness gauge measurements to automatically predetermine mill settings before each pass. In addition, it automatically controls slab elongation in a single pass roughing stand to control width of skelp furnished by broadside rolling in the reversing mill.

The Prodac control system automatically directs the positioning of the roughing and main mill screwdowns, side guides, and edger adjustments once information from the punched cards passes into the control system. Furthermore, it controls mill and table speed, draft compensation, and cycle operation. Also, the system permits the operator to assume manual control at any point in the rolling cycle, and then to return the operation to automatic to complete the sequence.

Armco Ships Production Facilities to Houston

National Supply Division of **Armco Steel Corporation** recently shipped an entire manufacturing facility for oil well drill collars and sucker rods to its Houston, Texas plant from Ambridge, Pa.

The machinery and material were shipped on barges supplied by Union Barge Line Corp. of Pittsburgh. Six barges, at the rate of one a week, were towed down the Ohio and Mississippi Rivers to New Orleans, then via the Gulf Intracoastal Waterway to Houston. The entire drill collar and sucker rod departments have been transferred to Houston from the Ambridge plant.



Copolymer Butadiene Plant Expansion—La.

With the installation of the Dow catalyst process, the butadiene plant of **Copolymer Rubber & Chemical Corporation** of Baton Rouge, Louisiana, became the second commercial plant in the United States to make use of this new method of producing butadiene. Butadiene is the principal ingredient used in the manufacture of SBR rubber, the type made by Copolymer.

The Dow catalyst unit, which went on stream on June 12, is a part of the $5 million expansion program announced some months ago. Foster Wheeler Corporation of New York designed and constructed the new additions.

Elaborate inter-locking and valve switching arrangements were incorporated in the highly automated plant to insure maximum safety in working conditions for the operating personnel. The new process has increased production capacity by approximately 50%. Only one other plant in the United States, located at Port Neches, Texas, uses this process.

Expansion of Copolymer's power plant was also required for the installation of the new unit. A steam boiler and a turbo-generator were among the additions necessary Steam capacity was increased some 220,000 pounds per hour, which with the older units gives a total yield of nearly 17 million pounds per day.

Copolymer's new rubber production line also is now completed and in operation. Non-pigmented rubber is presently being produced on the new facility, which is designed to produce non-staining rubbers of improved color without contamination. Copolymer's rubber production is now rated at 133,000 long tons gross per year. The plant was formerly rated at 95,000 long tons gross annually.

Dean Hill—Houston

Dean Hill Corporation of Indianapolis recently announced the appointment of the Heyck Equipment Company, P. O. Box 22074, Houston 27, Texas, as its pump representative in the Houston area. The company is headed by Mr. T. R. Heyck.

T. C. Wilson—S.E. Sales

The F. L. Bishop Company, with headquarters at 333 Candler Building, Atlanta, Ga., has been appointed sales agent for the Southeast by the Pneumatic Tool Division, **Thomas C. Wilson, Inc.**, Long Island City, New York. Mr. Bishop will handle and appoint distributors for Wilson's complete line of portable pneumatic drills, grinders, and sanding and wire brushing machines, in Georgia, Florida, Alabama, Tennessee, Virginia, North Carolina, and South Carolina.

(Continued on page 64)

INDUSTRY SPEAKS

A Guide for Electrical Equipment Manufacturers

A STATEMENT OF PRINCIPLES to guide electrical manufacturers in compliance with the antitrust laws was adopted on June 20 by the Board of Governors of the National Electrical Manufacturers Association. The Statement embodies Principles which are suggested as sound guideposts for observance by individual companies.

Statement of Principles

It is the obligation of each business enterprise in the electrical manufacturing industry:

(1) To design and manufacture good products and to market them at fair prices commensurate with the quality and values offered.

(2) To create new products and improve existing products in order to provide better values for customers and the nation's changing needs.

(3) To present fairly the quality, performance characteristics, and other values of its products.

(4) To jealously guard its freedom and independence in marketing and pricing its products and to take care to see that it does not abdicate its authority and responsibiliity to any competitor; and to accept and support the principle that competition, and the survival of the free enterprise system, presupposes the free and competitive pricing of goods and commodities.

(5) To determine independently the prices to be charged for its products, and all terms and conditions of sale. Any agreement or understanding among competitors, whether oral or written, concerning their prices or price policies or terms of sale, is a violation of law, a violation of this Statement of Principles, and an act of business immorality. The single exception is a good faith negotiation for an agreement of purchase or sale.

(6) To gather competitive and market information necessary to the intelligent conduct of a business enterprise only through legal and proper channels.

(7) To accept as a function and responsibility of management the education of itself and its employees with respect to the antitrust laws and to take such steps as may be appropriate in each individual case to ensure compliance with those laws at all levels and to promote an awareness of the responsibilities which corporations have as citizens.

NEMA Activities

It is appropriate on this occasion for the National Electrical Manufacturers Association to reaffirm the following basic principles which govern all activities sponsored by the Association:

1. The activities of NEMA shall continue to be conducted pursuant to written policies and principles for the guidance of members and staff alike, and continued membership in NEMA is predicated upon acceptance and support of these policies and principles. These policies set forth the proper limits of such appropriate functions as standardization, the collection and dissemination of statistics, and business development and promotion.

2. All NEMA meetings shall continue to be limited to those occasions where legitimate and worthwhile objectives justify a coming together to discuss and act upon legal and proper problems. No other form of gathering or meeting is sanctioned or sponsored by NEMA.

3. Each such meeting shall continue to be held pursuant to a written agenda and is to be conducted in the presence of a staff representative of the Association, whose responsibility it is to keep full and complete minutes of all discussion and decisions. Such minutes are kept on file in a proper place and are available to any properly interested person.

4. Discussions of such commercial policies and practices as prices, terms and conditions of sale shall continue to be prohibited at such meetings.

ONE OF A SERIES OF CHATS ABOUT THE CONSERVATION AND CONTROL OF HEAT

SARCO TOPICS

STEAM CONSUMPTION WAS ERRATIC AT THE SHERATON-ATLANTIC

This is a documented steam story, and if you have the *least* interest in reduction of steam costs you'll read on. The events took place in the laundry and dry cleaning department of the Sheraton-Atlantic Hotel in New York, which purchases district steam; but they could have happened in *any* steam using establishment — including your plant.

This documentary is concerned with money — (their steam bills for laundry and dry-cleaning were tremendous) and how the Sheraton cut the bill $8500 in one year. That's giving away the climax, but not the plot. To begin with, the Sheraton engineering department kept a daily log which revealed excessive steam costs and startling discrepancies. For example, on one day, 44,000 lbs. of district steam were metered and 20,300 pieces finished. On another day, 38,000 lbs. of steam were metered and 23,300 pieces finished. Clue: This ratio was obviously cockeyed!

To relieve your suspense, we can tell you that the Sheraton removed competitive bucket traps and installed around fifty Sarco Thermo-Dynamic Steam Traps, Type TD-50, on the discharge side of each piece of steam heated equipment, and on drips on supply mains between meters and equipment, as recommended by Sarco. The results were dramatic. (Strong men didn't weep, but they did clap their hands a bit.) In the pre-Sarco December, 868,000 lbs. of steam were purchased for $1725. In the post-Sarco December, only 532,000 lbs. of steam were purchased, for $1025. And the volume of work had increased!

There are no crystal gazers on the Sarco staff; lots of competent engineers, though. These steam detectives find inefficient steam trapping at the bottom of countless high cost mysteries. Sad part of it is, the high cost of steam is only part of the story. Inefficiency in trapping can create other costly problems, too.

We talk a lot about our Thermo-Dynamic trap, don't we? So do other people. In fact we're quite used to grateful cheers of appreciation. Why don't you get the full story, by asking for it? Phone, telegraph, mail—choose your favorite medium of communication.

SARCOTROL! OUR WORD FOR SOMETHING SPECIAL IN TEMPERATURE CONTROL

It may be just what you've been looking for. We don't know. It's rather unusual. We know what it can *do*, but we still don't know everyone who needs it, even though we've been selling Sarcotrol successfully for many years to the plastic fabricating industry. New people we never heard of keep popping up saying it's just what they've needed.

When we designed Sarcotrol we planned it for specific use as a heating and cooling unit for injection molds, cylinders, rolls and drums. What surprises us is that so many different kinds of other equipment are evidently now in search of just such a control, from Banbury mixers to electric coffee pot testers.

The Sarcotrol is a portable, automatic temperature control system utilizing closed recirculation of the heat transfer fluid, to insure even temperatures throughout the equipment being heated and/or

cooled. When we designed Sarcotrol we planned it for specific use as a heating and cooling unit for injection molds, cylinders, rolls, and drums. What surprises us is that so many different kinds of other equipment are evidently now in search of just such a control, from Banbury mixers to electric coffee pot testers. New people we never heard of keep popping up saying it's just what they've needed.

If you, too, feel a responsive cord vibrating, write us for details. There is a mass of literature available explaining everything you could want to know about it.

SOUTHERN COMFORT

It's true what we've said all along about Dixie: Sarco *is* well represented in the South. In fact, there are Sarco representatives in 29 southern cities. This means that your pesky problems of conserving and regulating heat have available solutions nearby. No room for addresses and phones here, but here are the southern Sarco cities and the organizations to call: *Alabama*, Birmingham, Bratton Sales Engineers; *Arkansas*, Little Rock, J. L. Brown Sales Co.; *D. C.*, Washington, Sarco Company Inc.; *Florida*, Pensacola, Bratton Sales Engineers; Tampa, O. H. Howell Mfrs. Agent, Inc.; *Georgia*, Atlanta, John F. Templeton Co.; *Louisiana*, Shreveport, J. W. Cherry Company; New Orleans, Frank A. Birdsong; *Maryland*, Baltimore, J. E. Perkins Corp.; *Mississippi*, Jackson, Robert Porter; *Missouri*, Kansas City, Smith Steam Spec. Co., Inc.; St. Louis Sarco Co., Inc.; *North Carolina*, Charlotte, Hoffman & Hoffman Co.; Raleigh, Hoffman & Hoffman Co.; *Oklahoma*, Tulsa, Vanco Engineering Co.; *South Carolina*, Columbia, Hoffman & Hoffman Co.; Greenville, Hoffman & Hoffman Co.; *Tennessee*, Knoxville, Walter F. Sutton; *Texas*, Dallas, Gilbert Engineering Co., Inc.; El Paso, Engineered Equipment Inc.; Ft. Worth, Gilbert Engineering Co., Inc.; Houston, Esch and Associates, Inc.; San Antonio, L. S. Pawkett & Co.; *Virginia*, Richmond, Robert S. Lovelace Co.; *West Virginia*, Charleston, Angus Gillis & Son.

SO YOU THINK YOUR PROBLEM'S UNIQUE?

Lots of hot water and steam is being wasted these days, in lots of ways. If your eyes glaze as you watch your steam bills mount or shut down your equipment for maintenance, you probably wonder what you did to deserve such problems. If it's any consolation, it's very unlikely that you are alone in your misery. The chances are excellent we have solved just such a problem already for plants similar to yours. Try us. Describe your problem in a letter. We'll probably be able to send you a set of Sarco Case Histories, describing how other plants were able to conquer problems like yours.

6615

SARCO

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STRAINERS • HEATING SPECIALTIES

TIMELY COMMENTS

Air Conditioning Key to Better Profits

STUDIES IN 14 INDUSTRIES show that increases in earnings due to air conditioning for worker comfort have regained from 20 to 100 per cent of the investment in air conditioning installations during the first year.

Russell Gray, president of Carrier Air Conditioning Company which conducted the survey, said the 19 factories studied make products ranging from auto seat covers and filing systems to electronic components for the Nike Zeus missile.

American Kleer-Vu Plastics, Inc., which makes transparent page protectors in a plant at Brownsville, Tenn., earned a 32 per cent return last year on its investment in air conditioning, Mr. Gray said. "Summer output jumped so substantially that annual production was up 6.5 per cent," he added. "Absenteeism dropped 17 per cent and labor turnover went down 23 per cent from previous levels."

Mr. Gray said the Transicoil Division of Daystrom, Inc. in Worcester, Pa., which makes mechanisms to keep missiles on target, earned a 41 per cent return on its investment after an existing system was re-engineered. Increased summer production raised the annual output 2.7 per cent and the number of rejects was reduced 5 per cent. Labor turnover dropped 25 per cent and absenteeism was virtually eliminated.

The Densal Manufacturing Corporation of West Springfield, Mass. increased its earnings enough to pay off the cost of the air conditioning system in less than one year. Other firms reporting good returns on their investment in air conditioning were Simpson Electric Company of Chicago with an 80 per cent return, Acme Visible Records, Inc. of Crozet, Va. with 35 per cent and Nardis Sportswear of Dallas with 31 per cent.

Reductions in absenteeism, labor turnover, training expenses, spoilage, and increases in worker productivity at the firms surveyed were not large when considered separately, Mr. Gray said. "But when all were combined and translated into terms of dollars and cents, "the plant officials were amazed at the amounts involved."

The survey showed that the average cost of air conditioning was less than 2 per cent of annual wages and the resulting increased returns almost always exceeded the cost of owning and operating the system.

From the 19 plants studied, Carrier was able to calculate today's average costs for a "high quality" factory air conditioning system.

The plants, Mr. Gray said, averaged 30,000 square feet in floor area occupied by 150 workers on the first shift and 50 on the second. The initial investment per worker averaged $400 or $79,000 for the space described. The average annual owning and operating cost for air conditioning was $76 per worker. The cooling capacity required was 140 tons.

Plant owners and managers are generally skeptical about air conditioning their production facilities, because heat loads are greater in factories than most other types of buildings. However, Carrier has prepared an investment analysis which the owner can use to determine the amount of annual return he can expect on his investment in air conditioning.

The Carrier executive also noted that it is not always necessary to air condition an entire factory. Generally, only areas where there is an average of one worker per 150 square feet will prove profitable for installation of air conditioning."

There are approximately 6,000,000,000 square feet of factory floor area in the nation, of which only 6 per cent is air conditioned.

Zero Accidents

SOUTHERN POWER & INDUSTRY—DEAR SIRS:

"In your June issue under *Timely Comments*, it was pointed out that *Zero Accidents Are Hard to Achieve*. Indeed that is true! To achieve such a goal, it is a certainty that top management must first be sold on the precept that safety is as important as any other business function. With this directive, complete safety can be achieved only through continual, intensive, and sincere safety effort on the part of every individual in the organization.

It may be of interest to you to know that the Du Pont Company during the month of April did in fact accomplish the goal of working one month without a lost time accident. Was it an *accident* that this was accomplished? We who were a part of this achievement do not believe so.

L. J. DAVID, Plant Engineer
E. I. du Pont de Nemours, Brevard, N. C.

Coming in DECEMBER
Southern Power & Industry
THERMAL INSULATION

Reference Guide

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Buyer's Directory

for the

South-Southwest

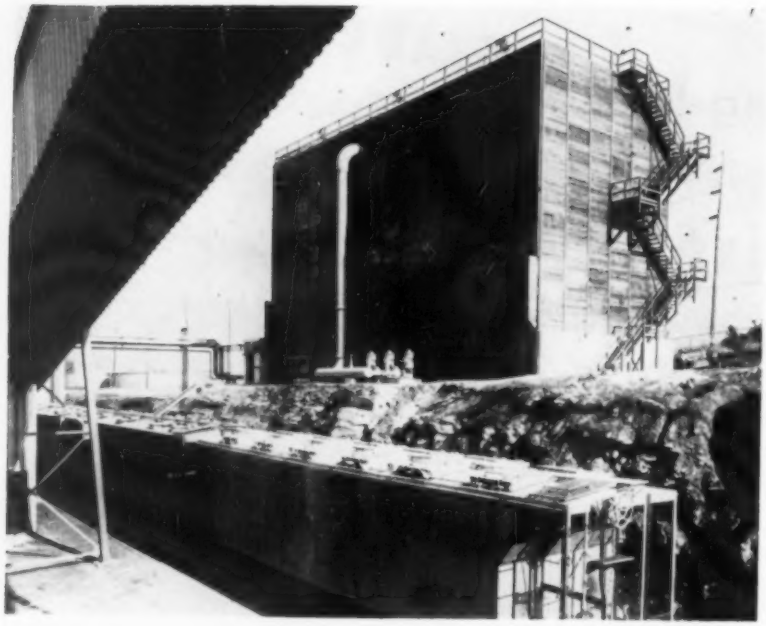
Reference Guide and Buyers' Directory (included in SPI's regular December '61 Edition) will feature:

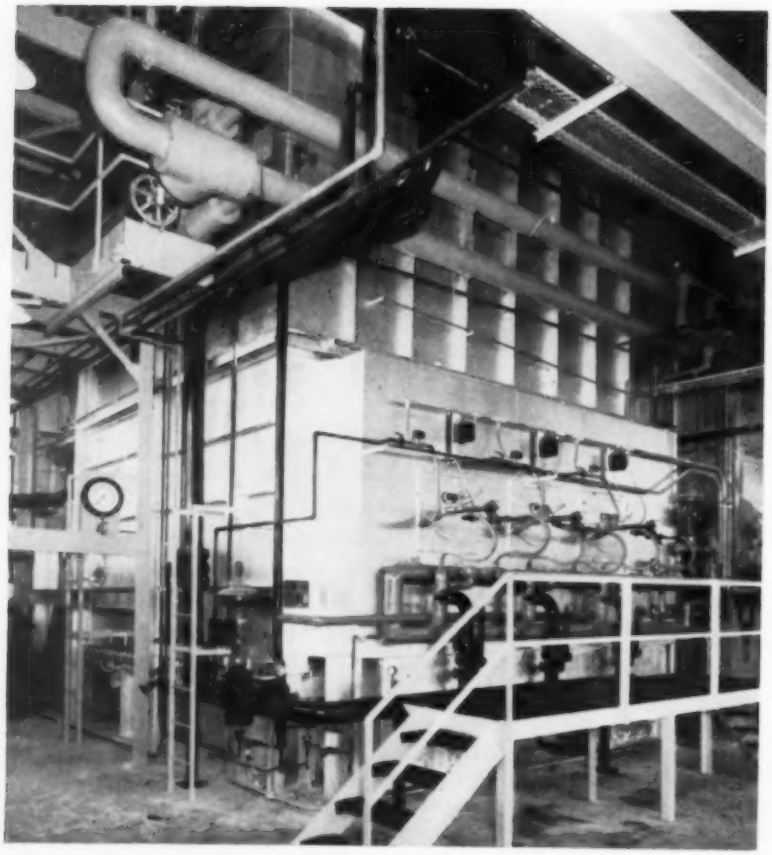
NEW PRODUCT BRIEFS & BULLETINS — sheets & fiber . . . blocks & boards . . . magnesia & asbestos . . . cork, felt & wool . . . silica & mica . . . cements & adhesives . . . jackets & coatings

SALES ENGINEERS serving you in The Industrial South-Southwest — Directory type listings including name, address and phone number.

This is SPI's annual technical service aid in the Thermal Insulation field for 1961 — a real service to you and 17,500 other Consulting-Operating-Maintenance personnel in over 12,300 plants in The Industrial South-Southwest.

Expanded Services for Ford's Nashville Glass Plant





More Production Requires More Water More Steam

EXPANDED PRODUCTION facilities at Ford Motor Company's automobile glass plant in Nashville, Tenn. are served by an enlarged mill water system and boiler house addition just completed on a turnkey design-and-build contract by Dravo Corporation, Pittsburgh.

Addition of a second sheet furnace and a second plate furnace made necessary a 50 per cent increase in the supply of process and cooling water entering the plant through a mill water system installed in 1956.

To meet the increased needs, a third 90-foot-diameter, 7000-gpm clarifier and a second 50-foot-diameter surge tank were added. Four 4000-gpm pumps in a floating pump barge moored in the Tennessee River have been replaced with four 6000-gpm pumps.

An existing service pump house on shore also has been enlarged to accommodate three additional 4000-gpm pumps and a standby pump to be installed at a future

ABOVE — Conditioned water travels in a closed circuit between components of the plant and the cooling tower. The tower shown here cools 6000-gpm of water from 130 to 90 F.

LEFT — Enlargement of the boiler house included installation of this 80,000-pound-per-hour 125-pound boiler.

date. Plant requirements previously had been met with only four 4000-gpm pumps.

A coil shed cooling tower, designed to cool 6000-gpm of mill water from 130 degrees Fahrenheit to 90 degrees, is included in the new construction. Conditioned water travels back and forth between certain critical components of the glass furnaces and the tower in a closed circuit cooling system.

Mill water piping for the new sheet and plate furnaces has been installed, and piping for the old furnaces has been modified to permit installation of a water tempering system consisting of six water blending stations in which used hot mill water can be mixed with cooled water to attain any desired temperature.

Newly-built gas metering stations are linked with the new furnaces by 6-inch and 8-inch overhead gas lines.

Enlargement of the boiler house included installation of a fourth 80,000-pound-per-hour boiler, designed to operate at 125 psig saturated, and a 3200 cfm air compressor, designed for 110 psig discharge pressure. Dravo also installed a 300-gpm boiler feed pump and a variety of auxiliary equipment and piping.

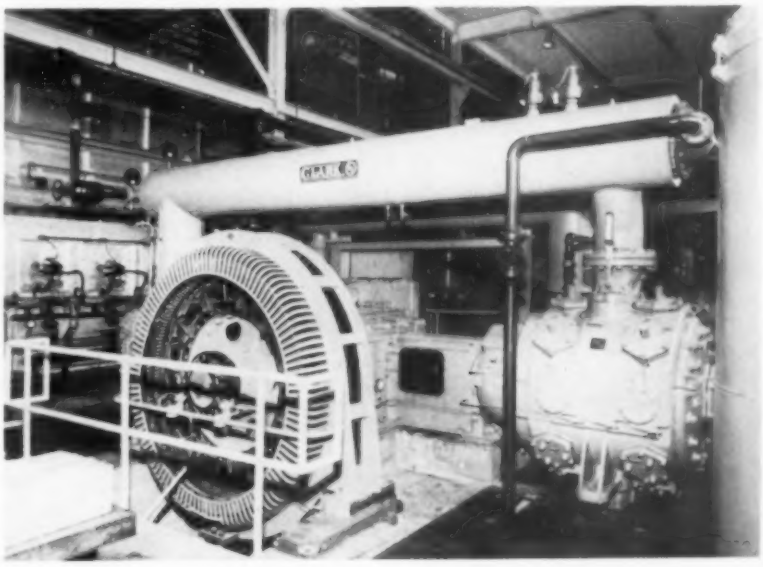
Alterations and additions to the boiler feedwater system have increased deaerating capacity to 540,000-pounds-per-hour and make-up capacity to 250,000 pounds per hour.

Capacity of the plant's propane tank farm has been almost doubled with addition of nine 30,000-gallon tanks to ten already in use. Each of the new tanks weighs 80,000 pounds empty.

An adjacent propane vaporizing station has been extended in size and a 1592-cfm rotary type compressor added. The new compressor powered by a 200-hp motor, has a 30-pound discharge pressure. Modifications have been made in the two original compressors to bring their discharge pressure from 15 psi to 27 psi.

Involved in the Dravo projects were a number of modifications in existing piping and control systems, as well as construction of necessary foundations and other structures.

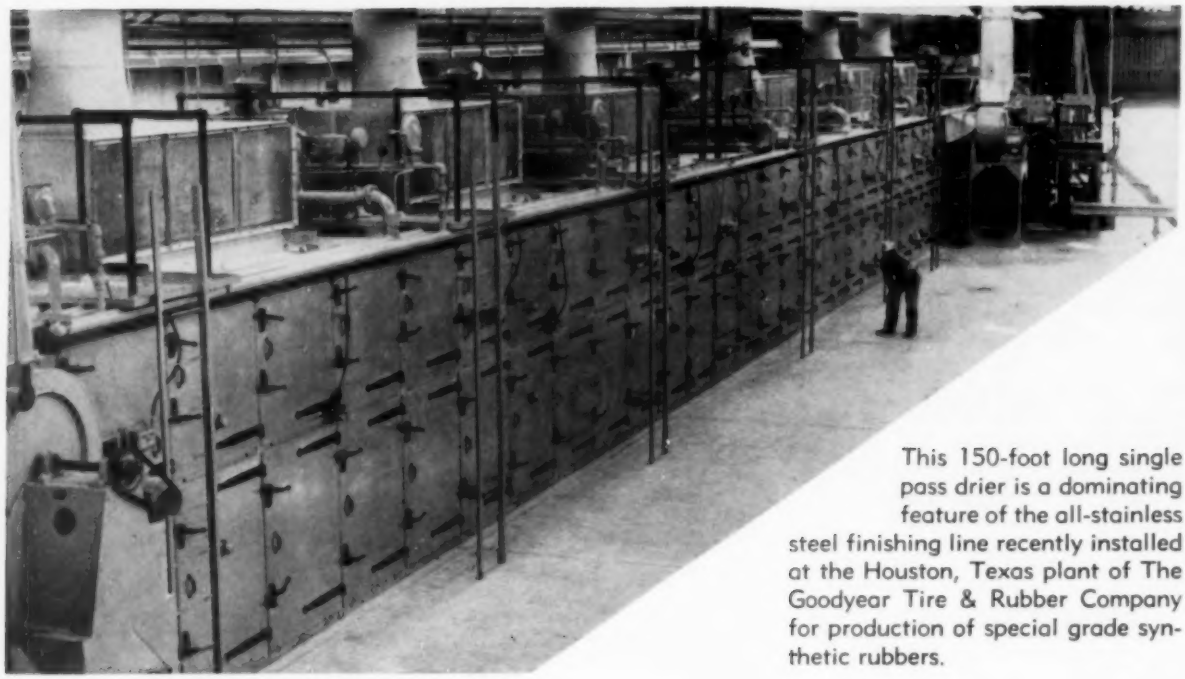
The third 7000-gpm clarifier (left foreground) and second 50-foot-diameter surge tank (right foreground) were installed as part of the expansion program.



This compressor which is part of the expansion program is rated at 3200 cfm of air at 110 psig.

PARTIAL LIST OF PRINCIPAL EQUIPMENT

Clarifier	Walker Process Equipment Co.
Pumps, 6000 gpm	Fairbanks-Morse & Company
Motors	General Electric Company Wagner Electric Company
Other Pumps	DeLaval Steam Turbine Co. Fairbanks-Morse & Company
Cooling Tower	J. F. Pritchard & Co. of Calif.
Boiler	Babcock & Wilcox Company
Air Compressor	Clark Brothers Company
Propane Compressor	Fuller Company



This 150-foot long single pass drier is a dominating feature of the all-stainless steel finishing line recently installed at the Houston, Texas plant of The Goodyear Tire & Rubber Company for production of special grade synthetic rubbers.

Clean Lines Important in Houston Rubber Plant

SPECIAL stainless steel equipment, installed at a cost of $1.3 million to produce high purity synthetic rubbers, recently went into operation at The Goodyear Tire & Rubber Company's plant at Houston, Texas.

It is the only installation in the synthetic rubber industry in which stainless steel is used on all interior as well as exterior equipment surfaces, according to H. R. Thies, general manager of the company's Chemical Division.

"With a degree of cleanliness unique to rubber manufacturing and new processing techniques, chances of contamination from dust, rust, corrosion and other impurities in the rubber have been practically eliminated," he explained. "Rubber processed through this special finishing line will have significantly lower ash content and whiter color."

The installation was designed and engineered by Goodyear to provide a new degree of flexibility in the operation of the world's largest synthetic rubber plant. Among the unusual features of the installation is a unique, 150-foot long single pass, gas-fired dryer which utilizes indirect heating with filtered air to eliminate contamination from carbon and other products of combustion from the heat source.

Other equipment normally not found in commercial production synthetic rubber plants are re-slurry tanks and a new type of dewatering device. Mr. Thies explained that the re-slurry tanks provide an additional washing step to remove water soluble residual salts from the rubber.

The screw type de-watering device reduces moisture content of crumb rubber to about 10 per cent, he continued. This is accomplished by a squeegee method which further reduces non-rubber impurities in the product. Conventional dewatering equipment lowers moisture content to only 40 per cent, he pointed out.

The new line, housed in an enclosed 250-foot long building constructed especially for the installation, also includes coagulation tanks; vibrator screens; spiral conveyors; Jeffrey disintegrator, and baler and film wrap machines.

Among the products to be processed through the special finishing line are low water absorption, or electrical grade rubbers, improved hot rubbers for plastics modification and resin rubber masterbatches. In certain areas of use — plastics, wire and cable and other applications — there is increasing demand for synthetic rubbers with special inherent qualities and properties.

The new installation, Mr. Thies said, will enable Goodyear to produce a wider variety of such materials to meet the specific needs of manufacturers. "At the same time, it represents the application in a homogeneous unit of all experience gained previously in the manufacture of synthetic rubber. We believe the installation will give this plant versatility in that it will allow application of batch-type finishing to high volume continuously produced latex of uniform high quality."

Goodyear's Houston plant has an annual production capacity of 245,000 long tons and produces a line of 13 different styrene-butadiene rubbers.

PAINTS

PRIMERS

COATINGS

CLEANERS

PAINTS & PROTECTIVE COATINGS

SPRAYERS

BRUSHES

SCAFFOLDS

MASKS

Paints & Coatings....

Reference Guide and Buyer's

CATALOGS AND BULLETINS

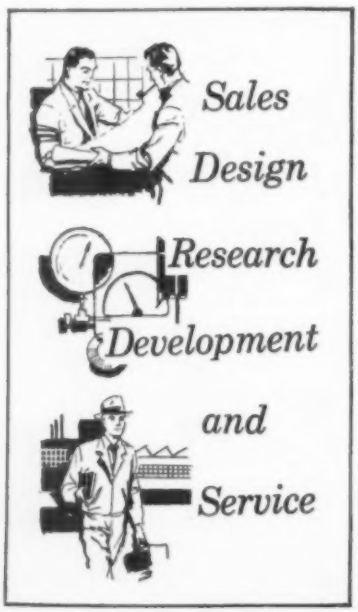
Reference literature available from manufacturers to help solve protective coating problems and apply materials and equipment.

Use Reader Service Card on Page 69

T-1—Heavy-Duty Paints—1961 Valdura Catalog, 32 pages, covers rust inhibitors, primers, corrosion resisting coatings, and other heavy-duty paints and coatings for industrial use.—AMERICAN-MARIETTA COMPANY.

T-2—Corrosion Control — Brochure, 10 pages, discusses research, products and service offered by protective coating specialists. Includes epoxies and other specialties. — PRUFCOAT LABORATORIES, INC.

T-3—Cold Coatings — Pamphlets T-197-1, 2 & 3, present an inhibitive primer; a modified coal tar emulsion coating; and a heavy-bodied emulsion material combining coal tar protection with adhesive properties.—KOPPERS COMPANY, Tar Products Division.



T-4—Maintenance Painting—Manual details Planning, Surface Preparation, Application, Film Thickness, Classification of Surfaces, Abrasion and Heat Resistant Finishes, and Fungus Control.—PORTER PAINT CO.

T-5—Tank Lining—Bulletin, 4 pages, explains how "Kolmetal" metallic lining and coating prevents contamination in tanks carrying edible products, oil, salt water and chemicals. — EMJAY MAINTENANCE CORP.

T-6—Maintenance Gun — Brochure describes the Von Arx Air Gun, a lightweight tool for tough cleaning, descaling and de-rusting jobs, available in a convenient kit with accessories.—MARINDUS COMPANY.

T-7—Floor Maintenance—Catalog, 4 pages, describes metallic, asphalt, latex, epoxy and other products for hardening, resurfacing and patching concrete or wood floors. — A. C. HORN COMPANIES.

T-8—Silica-Graphite—Bulletin V-100 (361), 4 pages, includes color chart for silica-graphite primers and paints featuring high chemical resistance, increased moisture repellency, and greater film flexibility. — THE JOSEPH DIXON CRUCIBLE COMPANY.

T-9—Anti-Corrosive Paints—Catalog No. 61A, 4 pages, explains how lead-suboxide is employed in metal protective paints to produce rust-inhibitive coatings with simplified maintenance.—SUBOX INC.

T-10—Cements & Plastics—Bulletin 1-1, 13 pages, catalogues corrosion-proof cements, flooring materials, interliners, coatings, and rigid plastic fabrications. — ATLAS MINERAL PRODUCTS COMPANY.

T-11—Rust Prevention—Catalog No. 59, 48 pages, consists of sections on protective coating specifications, pipe identification colors, problem area answers, and chart of color chips.—RUST-SELE COMPANY.

T-12—How to Reduce Painting Costs —Bulletin is a "Quick Reference Guide" on how to reduce painting costs by means of engineered paints developed to resist the wear and tear of weather. — BARRELED SUNLIGHT PAINT COMPANY.

T-13—Corrosion Control Systems — Bulletin 9111 outlines five-step procedure for primary protection of all metal surfaces subject to acids, alkalies, solvents, fumes and gases.—TRUSCON LABORATORIES.

T-14—"Liquid Tile"—Technical Bulletin No. 88, 5 pages, introduces Thiopoxy 61, a corrosion resistant coating for metal, masonry and wood surfaces, to be applied like paint and having no solvents to evaporate. — SUN CHEMICAL CORPORATION.

T-15—Industrial Mastics—Nokorode Bulletin, 12 pages, outlines uses and specifications of "Seal Kote" asphalt base moisture and vapor barrier compounds to protect metals and other surfaces. — LION OIL COMPANY.

T-16—Aluminum Colors—Form 30-11451, 4 pages, shows how to decorate, weatherproof, and preserve a variety of surfaces and structures by means of metal-bright, light-fast colored aluminum paint.—ROYSTON LABORATORIES, INC.

T-17—Protective Painting — Folder No. 751-T, 28 pages, is an Engineers' Painting Guide for sewage plants and water works, covering surface preparation, application, spe-

Directory for the South-Southwest

cifications and descriptions of paint and related products available.—INERTOL CO., INC.

T-18—Vinyl Mastic—Brochure, "Vimasco WC-1," 6 pages, tabulates maintenance uses of vinyl mastic for use over any pre-formed high or low temperature insulation, and for interior or exterior tanks and lines. — VIMASCO CORPORATION.

T-19—Heat-Proof Coatings — Form No. MPC 5-460, 4 pages, tells how to stop corrosion and destruction of metals with heat-proof protective coatings, and catalogues products for various applications. — MARKAL COMPANY.

T-20—Pipe Protection—Bulletin H-8411-504, 4 pages, lists 8 steps to pipe coating and wrapping, and illustrates each with photograph. Shows typical installations and summarizes services available.—SOUTHERN PIPE COATING COMPANY.

T-21—Epoxy & Vinyl — Bulletin C-201, 4 pages, gives data on "Arcopon" catalyzed epoxy metal paints; and "Arcovin" vinyl metal finish. Covers properties, application, and recommendations.—THE ARCO COMPANY.

T-22—Spray Equipment — Section D-1, 12 pages, catalogues Hydra-Spray equipment to apply materials fast and evenly by utilizing hydraulic pressure only through a small shaped orifice for complete atomization. — GRAY COMPANY, INC.

T-23—Tapes & Adhesives—Bulletin 104-59-1, Issue No. 6, 14 pages, describes line of pressure-sensitive tapes, refinishing supplies and industrial adhesives with tables giving catalog information.—PERMACEL.

T-24—Soluble Silicates — Bulletin T-17-42, 3 pages, covers soluble silicates for various cementing, impregnating, and coating uses. Lists materials bonded with silicate. — PHILADELPHIA QUARTZ COMPANY.

T-25—Bitumastic Coatings—Bulletin No. T-97-61, 8 pages, presents solution to corrosion and deterioration problems, covering 9 "Bitumastic" products.—KOPPERS COMPANY, INC., Tar Products Division.

T-26—Primers & Finishes—Bulletin No. 61B, 4 pages, shows colors for rust-inhibitive primers and finishes used in heavy industrial areas, as well as self-priming one-coat paints for metals.—SUBOX INC.

T-27—Oleoresinous Primer—Bulletin No. 015B, 4 pages, describes Universal Primer P-50, its properties and application, and includes a Data Digest. — PRUFCOAT LABORATORIES, INC.

T-28—Polyester Plastics—A.I.A. File No. 25, 4 pages, tells how to achieve tile-like lifetime finishes with polyester plastics. Discusses protective qualities of Glid-Tile. —THE GLIDDEN COMPANY.

T-29—Asphalt Paint—Form No. 1230, 4 pages, tabulates advantages of Rapid Asphalt Paint for insulation and resistance to moisture, acids, and alkalies. Illustrated with plant photographs.—THE RUBEROID CO.

T-30—Insulating Mastics — Bulletin PCI-5-559, 10 pages, lists service recommendations of Pitt Chem Insul-Mastic 533 to provide thermal insulation, condensation control, weathersealing and protection against corrosion. — PITTSBURGH COKE & CHEMICAL CO.

T-31—Porous Masonry Seal—Bulletin describes GACO D-70 vinyl coating to provide complete moisture seal and permanent, bright glossy finish for porous masonry structures. — GATES ENGINEERING COMPANY.

T-32—Inorganic Zinc Primer—Bulletin 400, 4 pages, outlines three-coat system using Carbo Zinc 11; Rustbond Primer 6; and Polyclad 933-1 vinyl topcoat to resist weathering, salt, acid or caustic atmospheres. —CARBOLINE COMPANY.

T-33—Plasite Coatings — Brochure tells how Plasite coatings, available in many different formulations for a wide range of applications, achieve high chemical resistance. — WISCONSIN PROTECTIVE COATING CORP.

T-34—Aluminum Protection—Bulletin P57 gives full data on "Totalume" for use wherever engineers want total aluminum protection for critical surfaces, with minimum shut-down of plant operation. — THE WILBUR & WILLIAMS CO., INC.

T-35—Color Systems — New Color Horizons Systems Catalog features 110 actual color standards and 69 photographs of applications, introducing a new coating concept to industry.—RUST-OLEUM CORPORATION.

T-36—Vinyl Spray — Bulletin describes the Aerosol vinyl spray for instant repair and protection, an air dry vinyl coating which adheres to practically any clean, dry surface. —QUELCOR, INC.

T-37—Maintenance Finishes — Form 1750-461, 2 pages, lists products for high temperature service; for immersion, splash, and corrosive atmospheres; special purpose top finishes, and related coatings. — THE DAMPNEY COMPANY.

T-38—Metal Primer — Product Description covers a new Red Oxide Metal Primer for application on all ferrous metals, both interior and exterior. Outlines advantages. — MINNESOTA PAINTS, INC.

T-39—Industrial Color Program — New Functional Color Kit for industrial plants gives color specifications to promote geater human

Reference Guide and Buyer's Directory for the South-Southwest

efficiency, safety, comfort, and morale and explains each recommendation.—WARREN PAINT & COLOR CO.

T-40—Floor Protection — Technical Data covers Penntrowel Flextherm, a three-component, heavily filled resin coating with outstanding strength and abrasive wear, developed particularly to protect concrete surfaces.—PENNSALT CHEMICALS CORPORATION.

T-41—Paint Systems—Catalog 9-58, 46 pages, has sections on Napko protectives for every industrial coating requirement. Includes color charts and price lists of the various products.—NAPKO CORPORATION.

T-42—Airless Spraying—Leaflet introduces the HydraAirless 28 high pressure airless spraying system for medium production requirements, featuring economy and top quality finishing results. — THE SPEE-FLO COMPANY.

T-43—Color Coding Enamels—Color Card has chips of 18 popular colors of new fast drying, spray type enamels for coding stocks and work in process, plant identification and other operations.—REYNOLDS INK, INC.

T-44—Metallic Finishes — Technical Bulletin No. 7, 2 pages, covers Subalox Anodine Metallic Finishes in four colors resembling appearance of anodized aluminum used in industrial buildings.—SUBOX INC.

T-45—Galvanized Surfaces—Leaflet, 6 pages, describes Galva-Sele for protection of new or old unpainted galvanized metal surfaces. Chart shows colors offered.—RUST-SELE COMPANY.

T-46—Airpainting Equipment—Catalog MAP 7160, 28 pages, features various types of industrial manual and automatic airpainting equipment, with detailed technical data and photographs. — PAASCHE AIRBRUSH CO.

T-47—Water System Protection — Bulletin T-37-3, 3 pages, explains the successful use of liquid sodium silicate to control corrosion in hot and cold water lines. Lists applications and specifications. — PHILADELPHIA QUARTZ COMPANY.

T-48—Quick-Drying Paint — Data Sheet presents information on Teflate, an odorless, quick-drying paint which sets up a moisture barrier that shuts out all water penetration of outside, above-grade walls.—FLEXROCK COMPANY.

T-49—Waterproof Roofing—Asbestolite Bulletin, 2 pages, gives product information on new silicones added to aluminum coating, to preserve life of the vital saturating oils and retain elasticity of roof surface. — THE MONROE COMPANY, INC.

T-50—Chemical Coating — Permaspray Bulletin, 4 pages, describes a new chemical coating that can be applied like paint with spray gun, brush or roller, to prevent corrosion. — PERMASPRAY by LEONETTI ENTERPRISES.

T-51—Floor Topping — Bulletin No. 85, 7 pages, provides technical data on "Thiopoxy 60" floor topping and patching compound designed for severe corrosive and abrasive conditions.—A. C. HORN COMPANIES.

T-52—Pressure Blasting—Special Report, 12 pages, describes the areas of application for pressure blasting and the various media used, with emphasis on aluminum oxide and silicon carbide abrasive.—NORTON COMPANY.

T-53—Inhibitive Primer — Bulletin 5M-6-60, 6 pages, defines Bitumastic 11-S, an inhibitive primer developed to end undercutting; lists features and advantages and shows installational photographs. — KOPPERS TAR PRODUCTS DIVISION.

T-54—Spray Painting Equipment — Section A-1, Form No. 301-075, 24 pages, catalogues many items in the company's line of spray painting equipment, and explains engineering services.—GRAY COMPANY, INC.

T-55—Paint & Resin Application — Bulletin A-101-2 describes Turbulator Gun, and Bulletin A-101-3 the Formulator A for fast, efficient application of catalyzed epoxy and other coatings—both developed for spraying, pouring or foaming multiple component materials, including many new resins which preclude use of conventional spray equipment. — BINKS MANUFACTURING CO., Plastics and Resin Equipment Division.

T-56—Fire Retardants — Bulletin, 7 pages, gives specifications and general information on Nokorode Seal Kote Fire Retardant, both "No Flash" and Regular, and illustrates flame tests of these two new moisture and vapor barriers.—LION OIL COMPANY.

T-57—Painting with Aluminum in Color—Form 30-11457, 4 pages, tells how paints pigmented with Alcoa Aluminum can be used for heavy-duty and decorative protection. Illustrated with colored photographs. — ALUMINUM COMPANY OF AMERICA.

T-58—Epoxy Coating—Form 109-60-1, 2 pages, explains how PC4496 epoxy protective coating gives long lasting service when applied to concrete, metal, and wood surfaces. — PERMACEL.

T-59—Anti-Skid Coating — Bulletin introduces a new non-sparking, anti-skid industrial floor coating developed to assure safe footing on stairs, ramps and other potentially slippery surfaces.—WILBUR & WILLIAMS CO., INC.

T-60—Tank Lining & Dispersion Coating—Product Literature and complete application details are available on GACO H-150 Hypalon tank lining compound, and GACO H-5S cured Hypalon sheet. A liquid Penton Dispersion coating is included.—GATES ENGINEERING COMPANY.

T-61—Coal Tar-Epoxy Resin—Form No. PC 50 R-960, 8 pages, features "Tarset" coal tar-epoxy resin coating; "Insul-Mastic" Gilsonite-asphalt mastics and synthetics; and "Tarmastic" cold applied coal tar coatings. — PITTSBURGH CHEMICAL COMPANY.

T-62—Pistol Spray — Data Sheet, 1 page, covers a new texture machine with hopper mounted on the

gun, which spray-applies drywall textures, acoustic plasters, and many other materials. — GOLDBLATT TOOL COMPANY.

T-63—All-Purpose Enamel — Form No. 04115, 4 pages, tabulates typical applications for "Speedenamel," an all-purpose, high-gloss alkyd enamel for industrial product finishing and maintenance painting.—THE GLIDDEN COMPANY.

T-64—Coal Tar Epoxy — Bulletin, 4 pages, charts test results of Napko coal tar epoxy after exposure to caustic, gasoline, acids, and salt spray. Includes general characteristics and specifications.—NAPKO INDUSTRIAL COATING DIVISION.

T-65—Heat-Resistant Coating—Form 1520-461, 2 pages, lists silicone coatings for temperatures to 1200 F; silicone-ceramic coatings for heat to 1400 F; and other products for high temperature service.—THE DAMPNEY COMPANY.

T-66—Roof Maintenance — Catalog 5D, 4 pages, describes Dri-N-Tite products for patching, priming and coating composition, corrugated or sheet metal, slag, gravel, concrete and felt roofs. — A. C. HORN COMPANIES.

T-67—Fire Retardant Paint—Bulletin, 4 pages, covers fire retardant paint which preserves load-bearing strength of both combustible and non-combustible surfaces, will not chip or crack, and is stable under all weather conditions. — VIMASCO CORPORATION.

T-68—Spray Guns & Accessories—Section E-1, Form No. 301-071, 12 pages, presents 11 Graco Hydra-Spray models plus guns and tips for all applications, including fine finishing.—GRAY COMPANY, INC.

T-69—Metal Priming — Rustmaster Bulletin, 4 pages, shows how maximum penetration of rust provides superior metal protection, and explains special penetrating agent used in product. — THE GLIDDEN COMPANY.

T-70—Coal Tar-Epoxy Coating—Bulletin, 4 pages, and Application Guide, 2 pages, give detailed information on how to achieve protection against most severe corrosive attacks with Tarset coating.—PITTSBURGH CHEMICAL CO.

T-71—Anti-Corrosive Gloss—Catalog No. 61C, 4 pages, shows 10 deep tone colors and 10 pastel colors in gloss paints and decorator finishes, featuring rust-inhibitive lead-suboxide bases.—SUBOX INC.

T-72—Treating Concrete—Folder 34-1-160 discusses advantages of treating concrete with "O" Sodium Silicate for dustproofing, oil proofing, acid resistance and moisture resistance. — PHILADELPHIA QUARTZ COMPANY.

T-73—Water Works Painting—Folder 587-T, 4 pages, is a guide to municipal and industrial water works maintenance painting; recommends painting system for each type of surface.—INERTOL CO., INC.

T-75—Concrete Sealer — Bulletin, 1 page, describes "Co-Bond," a versatile, low cost, new concrete preservative and sealer, which is easy to apply by brush, mop, or spray and penetrates deeply.—COMMERCIAL CHEMICAL COMPANY, INC.

T-76—Chlorinated Rubber Enamels—Form 1020 8-59, 4 pages, gives specification chart and other data for Val-Chem coatings to resist acids, alkalis, moisture and abrasion. — AMERICAN-MARIETTA COMPANY, Valdura Paint Division.

T-77—Vinyl Coatings — Form 1015 11-60, 4 pages, tells what Val-Chem vinyl coatings are and where to use them. Outlines recommended systems for standard vinyl and vinyl mastic. — AMERICAN-MARIETTA COMPANY, Valdura Heavy-Duty Paint Division.

T-110—Coal Tar Epoxy—Form 1190 12-59, 4 pages, covers Tarpo coating combining the chemical resistance of epoxy resin with the economy of coal tar.—AMERICAN-MARIETTA COMPANY, Valdura Heavy-Duty Paint Division.

T-111—Epoxy Coatings — Form 1014 5-61, 4 pages, describes advantages of epoxy coatings for highest resistance to chemicals, wide variety of uses, flexibility and adhesion, and abrasion resistance. — AMERICAN-MARIETTA COMPANY, Valdura Paint Division.

T-112—Asphaltic Coatings — Data Sheets cover many coatings for metal and masonry, including clay base emulsions, cutback primers, asphaltic paints, plastic anti-slip material and latex base colors. — THE FLINTKOTE COMPANY.

T-113—Waterproofing Accessories — Product Data on insulating waterproofing and adhesive accessories includes mineral colloid emulsion coatings, vapor barrier mastics, and many other products.—THE FLINTKOTE COMPANY.

T-114—Rust Preventives — Selection factors for the proper NO-OX-ID rust preventives for maintenance application featured in Bulletin 3200. Covers type of coating, product, recommended uses, physical characteristics, method of application and coverage.—DEARBORN CHEMICAL COMPANY.

T-115—Corrosion Control — Booklet, 20 pages — "Corrosion Control of Electric Light and Power Structures and Equipment" is designed to give company field operating men practical painting information on all phases of transmission and distribution work. Applicational photographs. — SUBOX INC.

T-116—CHIMNEY PROTECTION — New non-asphaltic, spray applied coating for use in concrete, steel, and brick chimneys inhibits corrosion from acid exhaust gases. Customer field tests rate STACK-FAS outstanding on heat, acid and fly ash abrasion resistance. — BENJAMIN FOSTER COMPANY.

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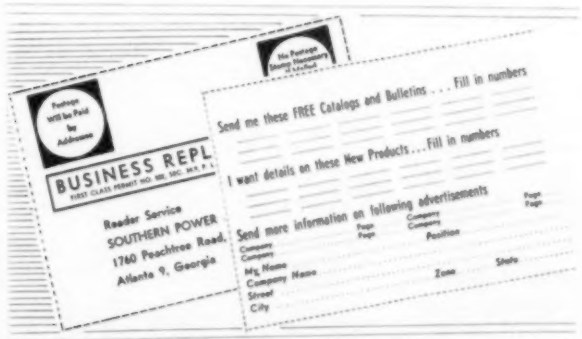


FREE READER SERVICE

A full-size reader service card is provided for your convenience on page 69. USE IT to order catalogs listed in this section and for other services offered.

The directory on following pages lists paints and coatings sales representatives that serve your area.

USE IT to help find the man you want to help you keep your equipment good looking and long lasting.

Buyer's Directory

This tabulation lists many of the important paints and coatings manufacturers and their representatives in the South and Southwest. Some manufacturers, however, failed to furnish information requested.

ALUMINUM COMPANY OF AMERICA, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

Georgia, Atlanta 9: J. L. Krumme, Alcoa Bldg., 1615 Peachtree St., N.E. Phone TRinity 5-7441

Louisiana, New Orleans 12: Raymond C. Hirsch, 1225 Whitney Bldg. Phone JAckson 2-3372

Missouri, St. Louis 8: Raymond C. Hirsch, 10th Floor, Continental Bldg. Phone FRanklin 1-6700

Texas, Dallas 1: James V. Cluff, 1900 Fidelity Union Tower. Phone RIverside 1-6291

AMERCOAT CORPORATION, 4809 Firestone Blvd., South Gate, California

Florida, Jacksonville: Amercoat Corporation, 2404 Dennis St. Phone EVergreen 9-7495

Texas, Houston: Amercoat Corporation, 6530 Supply Row. Phone WAlnut 3-2878

AMERICAN-MARIETTA COMPANY, 101 East Ontario St., Chicago 11, Ill.

Alabama, Birmingham 13: John P. McPhaul, 615 Euclid Ave. Phone TR 9-3109

Florida, Orlando: Ernest C. Davis, 601 West Yale Ave. Phone GArden 2-7689

Georgia, Forest Park: Dan Head, 106 College St. Phone (Atlanta) PO 1-2595

Louisiana, Baton Rouge: James D. Williams, 2008 Stanford Ave. Phone DIckens 3-9769

Louisiana, New Orleans: Roy A. Pickren, 8228 Zimple St. Phone UNiversity 1-1742

Oklahoma, Tulsa: Lynn F. Buchanan, 4510 E. 56th St. Phone NAtional 7-5821

Texas, Dallas: Robert O. Williams, 4575 Elsby. Phone FL 2-6082

Texas, Houston: Richard R. Vaughn, 4315 Tidewater. Phone ID 3-1490

Virginia, Richmond: William R. Myers, 7502 Patterson Ave. Phone ATlantic 8-7557

Industrial Distributors: In major cities — check "classified" in phone book

THE ARCO COMPANY, 7301 Bessemer Ave., Cleveland 27, Ohio

North Carolina, Cary: Matthew T. Brady, Jr., 4407 Robert St. Phone HOpkins 7-9356

Oklahoma, Oklahoma City: William S. Clogston, P. O. Box 19. Phone JAckson 4-0724

ATLAS MINERAL PRODUCTS COMPANY, 141 Whiteoak St., Mertztown, Pa.

Alabama, Birmingham 9: Industrial Products Company, 2815 18th Street, South. TRemont 9-5802

Texas, El Paso: Bernard Rodsky, P. O. Box 1593, First National Bank Bldg. KE 2-5747

Texas, Houston 27: Mercer Engineers, Inc., 3615 Meadow Lake Road. JAckson 8-5152

Virginia, Richmond: Thomas B. Cardene, 521 East Main St. Phone 644-3843

BARRELED SUNLIGHT PAINT COMPANY, 123 Georgia Ave., Providence 5, R. I.

Georgia, Atlanta: Preston R. Singletary, 2759 Mornington Drive, N.W. Phone 231-3155

Maryland, Baltimore 7: Robert M. Sinn, 6711 Alter St. Phone HU 6-8497

North Carolina, Charlotte: Thomas C. Roggenkamp, Asst. Sales Mgr. — Southern, 5048 Murrayhill Rd. Phone JA 3-7351

South Carolina, Greenville: H. Roy Mitcham, 239 Dorchester Blvd. Phone CR 7-3170

Virginia, Richmond: Everett M. Trites, 1121 Floyd Ave. Phone EL 9-1255

BINKS MANUFACTURING COMPANY, 3112 Carroll Ave., Chicago 12, Ill.

Georgia, Atlanta 13: C. E. Fuller, 196 Fourteenth St., N.W. Phone TR 5-7261

Louisiana, New Orleans: B. Q. Dean, 6215 Colbert. Phone HO 6-2528

North Carolina, Charlotte 5: M. O. Sutton, 764 Denning Place. Phone KE 7-0085

Tennessee, Nashville: D. E. Power, 2913 22nd Ave., South. Phone CY 8-4736

Texas, Dallas 35: W. W. Roche, 8005 Sovereign Row. Phone FL 7-7077

Texas, Houston 6: E. A. Preston, 4215 Graustark. Phone JA 2-5479

Virginia, Richmond: R. E. Moser, Box 433 Old Broad Rock Rd. Phone BE 2-4378

CARBOLINE COMPANY, 32 Hanley Industrial Court, St. Louis 17, Mo.

Alabama, Mobile: J. D. Kuffskie, Applied Engineering Sales Co., Box 7392. Phone GReenwood 9-1363

Florida, St. Petersburg 33: John J. Parkinson, P. O. Box 10665. Phone 5-7708

Georgia, Atlanta 5: Jack Reid, Hooker Reid Co., Box 11754. Phone CEdar 7-9385

Louisiana, Metairie: D. W. Crawford, Carboline Co., 6417 Kawanee Ave. Phone VErnon 3-8563

North Carolina, Charlotte: Lloyd E. Parks, P. O. Box 11184. Phone 523-4174

CATHODIC PROTECTION SERVICE, 4601 Stanford, Houston 6, Texas

Louisiana, New Orleans: 1627 Felicity. Phone JAckson 2-7316

Oklahoma, Tulsa: 2570 South Harvard. Phone RIverside 2-7393

Texas, Corpus Christi: 1620 South Brownlee. Phone TUlip 3-7264

Texas, Odessa: 5425 Andrews Highway. Phone EMerson 6-6731

CHARLESTON RUBBER COMPANY, Stark Industrial Park, Charleston, South Carolina

Alabama, Birmingham: Southeastern Products Corp., 1401 Lomb Ave.

Florida, Hialeah: East Coast Rubber and Plastics, 4363 East 10th St.

Florida, Tampa: Safety Equipment Co. of Florida, 9505 Florida Ave.

Kansas, Wichita: Rubber Supply, Inc., 719 East 3rd St.

Louisiana, New Orleans: Corrosion Coatings Co., P. O. Box 1037

Missouri, St. Louis: Zink Safety Equipment Co., 1401 Fairfax Trafficway

North Carolina, Charlotte: Livingstone Coating Corp., P. O. Box 8282

North Carolina, Greensboro: Southern Rubber Company, 360 Ashe St.

Texas, Dallas: Texas Rubber Supply, P. O. Box 6007

CHASE & SONS, INC., 19 Highland Ave., Randolph, Mass.

Louisiana, Baton Rouge: Reilly-Benton Co., 1041 Neosho St. Phone DI 4-6572

Louisiana, New Orleans 13: Reilly-Benton Co., 1645 Tchoupitoulas St. Phone 524-3374

Maryland, Baltimore: Gathmann Industrial Corp., 413 N. Charles St. Phone BE 5-7354

Oklahoma, Tulsa: J. L. Grady Co., 10 N. Cheyenne St.

Tennessee, Memphis: N. Hunt Moore & Assoc., 3373 Popular Ave. Phone FA 2-8077

Texas, Amarillo: James S. Kone & Co., 1701 N.E. 4th St. Phone DR 6-5678

Texas, Corpus Christi: Precision Insulation, 502 Westchester. Phone TU 4-7132

Texas, Houston 21: Precision Insulation Co., 2931 Holmes Rd. Phone JA 6-3591

Texas, Houston: Chase & Sons, Inc., 6666 Gulf Freeway. Phone MI 5-2013

THE DAMPNEY COMPANY, Hyde Park, Boston 36, Mass.

Florida, Jacksonville: Box 33, Station G. Phone ELgin 4-5646

Florida, Miami 37: 1047 N.W. 22nd St. Phone FRanklin 1-5782

Florida, Winter Haven: George L. Simonds Company. Phone CYpress 3-2171

Georgia, Atlanta 13: Spotswood Parker & Company, 313 Techwood Drive, N.W. Phone JA 2-3656

Louisiana, Shreveport: Hines F. Vaughan, 920 Kirby Place. Phone 4-8895

Maryland, Baltimore 30: Baltimore Copper Paint Co., 501 Key Highway. Phone LExington 9-0045

North Carolina, Charlotte 9: E. L. Mountcastle, 1024 Broadmoor Drive. Phone JAckson 3-7025

Virginia, Norfolk 10: Paxton Company, 1019 Main St. Phone MAdison 2-1606

DEARBORN CHEMICAL COMPANY, 375 Merchandise Mart, Chicago 54, Ill.

Georgia, Decatur: F. G. Lloyd, 2983 Pasadena Drive. Phone BUtler 9-2104

North Carolina, Charlotte: F. I. Chapman, 2218 Chambwood Drive. Phone EDison 2-3301

Tennessee, Nashville 4: G. E. MacLean, 726 16th Ave., South. Phone CHapel 2-0262

Texas, Dallas 6: R. W. Joyner, 5526 Dyer St. Phone EMerson 8-2050

Texas, Odessa: W. R. Trawick, 1408 Byron St. Phone EMerson 6-9210

Texas, White Deer: J. R. St. Clair, P. O. Box 157. Phone STerling 8-0570

THE DEVILBISS COMPANY, 300 Phillips Ave., Toledo 1, Ohio

Alabama, Birmingham 13: C. A. Walker, 2717 Millbrook Road. Phone TR 1-1240

Arkansas, North Little Rock: J. G. Farmer, Jr., 205 East I, Park Hill. Phone SKyline 3-0208

Florida, Jacksonville Beach: McDuff Cain, 1234 Seventh Ave., N. Phone CHerry 9-4022

Florida, Miami 57: B. J. Banning, 21120 Beach Road. Phone CEdar 5-8210

Georgia, Atlanta 18: R. F. Steele, 1100 Northside Drive, N.W. Phone TRinity 5-0554

Louisiana, New Orleans 22: O. J. Charbonnet, 2366 Dreux Ave. Phone 523-6829

North Carolina, Charlotte: J. S. McNamara, 1100 Roanoke Ave. Phone KEystone 7-4626

Oklahoma, Oklahoma City: W. B. Reed, 2816 Chaucer Drive, The Village 20. Phone VI 2-0902

Tennessee, Knoxville 6: A. E. Clevenger, 1017 Weymouth Lane. Phone 4-3783

Tennessee, Memphis 11: J. W. Anderson, Jr., 1285 Parkland Road. Phone FAirfax 7-5222

Texas, Bellaire 101: J. H. Mayer, 4600 Pin Oak Lane. Phone (Houston) JAckson 9-3775

Texas, Dallas 7: W. C. Spruce, 2506 Irving Blvd. Phone RIverside 1-4052

Texas, Lubbock: J. R. Herring, 5404 29th St. Phone SWift 9-6726

THE JOSEPH DIXON CRUCIBLE COMPANY, 167 Wayne St., Jersey City 3, N. J.

Georgia, Avondale Estates: H. J. Heinz, 20 Dartmouth Ave. Phone (Atlanta) DRake 8-5167

North Carolina, Charlotte 3: R. C. Alley, 1426 Waverly Ave Phone EDison 4-8520

Texas, Houston 24: R. E. Harris, 8566 Ridgepoint Drive. Phone HOmestead 5-5962

Virginia, Richmond 21: W. P. Kennedy, 24 Holly Drive. Phone ELgin 9-5830

West Virginia, Huntington 5: H. M. Hayder, 20 Mohawk Trail. Phone JAckson 2-0886

ECLIPSE AIR BRUSH CO., 390 Park Ave., Newark 7, N. J.

Alabama, Birmingham 1: Mill & Textile Supply, Inc., 3130 Third Ave., South

D. C., Washington 1: A. I. Robertson, 1108 Ninth St., N. W. Phone NOrth 7-4084

Texas, Houston 24: W. A. Wood, Jr., 8827 Chatsworth. Phone UNderwood 4-2230

EMJAY MAINTENANCE ENGINEERS (310 Twelfth St., Carlstadt, N. J.), P. O. Box 111, Rutherford, N. J.

Georgia, Savannah: 2 Bonaventure Road, Thunderbolt, Ga. Phone (Savannah) ELgin 5-0904

Reference Guide and Buyer's Directory for the South-Southwest (Continued)

THE FLINTKOTE COMPANY, 30 Rockefeller Plaza, New York 20, N. Y.

Florida, Jacksonville 11: W. C. Henson, 6438 Swallow Cove Road. Phone RAymond 4-6585

Louisiana, New Orleans 12: C. M. Abadie, 1221 Carondelet Bldg.

BENJAMIN FOSTER COMPANY, 4635-37 W. Girard Ave., Philadelphia 31, Pa.

D. C., Washington 10: William J. Barsh, 3714 Fourteenth St., N.W. Phone TAylor 9-4332

Florida, Jacksonville 11: Sheppard C. Bell, Jr., 3817 Bess Road. Phone ELgin 5-4127

Georgia, Decatur: James F. Munson, 2462 Miriam Lane. Phone (Atlanta) 233-7590

Texas, Houston 17: Harvey Lee, District Sales Mgr., P. O. Box 12406. Phone HUdson 7-1200

GATES ENGINEERING COMPANY, 100 S. West Street, Wilmington 99, Delaware

Florida, Jacksonville: Coatings, Inc., 3158 Belden Circle. Phone EX 8-7712

Kansas, Wichita: Leonard Russell, P. O. Box 1871. Phone AMherst 2-6676

Louisiana, Shreveport: Hones F. Vaughan, 920 Kirby Place. Phone 424-8895

Maryland, Annapolis: A. F. Seabrook, 18 Riverdale Drive. Phone COlonial 7-7234

Texas, Dallas: R. L. Heyden, 172 Leslie Street. Phone RIverside 1-3226

THE GLIDDEN COMPANY, 900 Union Commerce Bldg., Cleveland 14, Ohio

Alabama, Birmingham 3: H. Holcome, 2301 Sixth Ave., South. Phone ALpine 1-0273

Alabama, Mobile: O. W. Green, 1610 Government St. Phone GReenwood 9-5471

Alabama, Montgomery 5: D. L. Riley, 515 W. Fairview Ave. Phone AM 5-0876

Florida, Fort Lauderdale: J. H. Yearwood, 1113 N.E. Sunrise Blvd. Phone JA 3-8925

Florida, Jacksonville 2: P. W. Whaley, Jr., 344 Riverside Ave. Phone ELgin 3-4447

Florida, Miami 37: W. B. Grellner, 5400 N.W. 2nd Ave. Phone PLaza 8-2596

Florida, Orlando: L. E. Bowers, 2000 E. Colonial Drive, Box 6923. Phone GArden 3-2575

Florida, Tampa 9: J. H. Browder, 3120 Grand Central Ave. Phone REdwood 6-5179

Georgia, Albany: T. W. McLeod, 944 Oglethorpe Ave. Phone HEmlock 6-2212

Georgia, Atlanta 18: J. F. Lanier, Trade Sales Mgr., The Glidden Co., 1065 Glidden St., N.W. Phone SYcamore 4-1551

Georgia, Atlanta 13: O. Herrington, 375 Luckie St., N.W. Phone MUrray 8-6075

Georgia, Augusta: Z. Gray, 1725 Walton Ave. Phone PArk 2-0481

Georgia, Macon: E. E. Deas, 1395 Georgia Ave. Phone SHerwood 6-0531

Louisiana, New Orleans 13: W. D. Dickinson, Sales Mgr. Southern District, 424 Josephine St. Phone MAgnolia 2022

Missouri, Kansas City 10: N. T. R. Burton, 1214 East 47th St. Phone WEstport 1-1217

Missouri, St. Louis 2: T. D. Myers, Sales Mgr., Mississippi Region, 106 Gratiot St. Phone GArfield 1-2590

Missouri, Springfield: R. L. Juda, 738 S. Glenstone

North Carolina, Asheville: W. A. Bruning, 77 Coxe Ave. Phone ALpine 3-0434

North Carolina, Charlotte 6: C. W. Crabtree, 1001 S. Independence Blvd. Phone EDison 3-3737

Oklahoma, Oklahoma City 3: W. R. Dodson, Jr., 900 N. Robinson Ave. Phone CEntral 6-5335

Oklahoma, Tulsa 14: F. B. Kibble, 2703 S. Harvard Ave. Phone RIverside 3-4486

South Carolina, Greenville: S. H. Beard, 626 N. Main St. Phone PL 2-6887

Tennessee, Chattanooga 3: C. V. Averitt, 901 Central Ave. Phone AMherst 5-4557

Tennessee, Knoxville 2: C. E. Dominick, 319 Wall Ave. Phone 3-6138

Tennessee, Memphis 4: K. R. Adkins, 412 N. Cleveland St. Phone BRoadway 2-1729

Tennessee, Nashville 3: H. C. Cooksey, 1301 Church St. Phone ALpine 4-6554

Texas, Austin 5: J. K. Osborne, 5605 Burnet Road, Box 9201. Phone GLendale 3-7359

Texas, Corpus Christi: J. E. Nicks, 4125 South Alameda, Box 6303, Phone ULysses 3-6259

Texas, Dallas 9: H. P. Jensen, 5023 Lemon Ave., Box 10126. Phone LA 6-8948

Texas, El Paso: G. T. Murray, 700 Montana St., Box 3132 Sta. A. Phone KEystone 2-5416

Texas, Fort Worth 4: N. S. Kapp, 550 Hemphill St., Box 26. Phone EDison 6-5685

Texas, Houston 2: D. H. Wise, 2300 South Main St. Phone FAirfax 3-8338

Texas, Lubbock: R. L. Elliott, 2611 34th St. Phone SHerwood 4-8455

Texas, San Antonio 12: F. L. Usrey, 4211 Blanco Road. Phone PErshing 6-1534

GRAY COMPANY, INC., 1075 Sibley St., N.E., Minneapolis 13, Minn.

Florida, Jacksonville 5: J. E. Moon, 1041 Ingleside Ave. Phone EVergreen 9-3222

Georgia, Atlanta 9: J. Fred Smith, 1223 Spring St., N.W. Phone TRinity 6-6374

Missouri, Kansas City 8: R. B. Myers, 1717 Oak St. Phone VIctor 2-1959

Missouri, Webster Groves 19: Karl E. Hammer, 1273 South Rock Hill Road. Phone WOodland 1-2742

Texas, Dallas 24: Warren Turnell, 521 S. Manus Drive. Phone WHitehall 3-4295

Texas, Houston 23: J. E. Seifert, 5001 Gulf Freeway. Phone WAlnut 6-1781

Virginia, Martinsville: Bill C. Hall, 709 Orchard St. Phone MErcury 2-2803

HEIL PROCESS EQUIPMENT CORP., 12901 Elmwood Ave., Cleveland 11, Ohio

Alabama, Birmingham: Brownlee-Morrow Engr. Co., 745 N. 44th St., Box 3155. Phone LY 2-8143

Florida, St. Augustine: Engineered Products Co., P. O. Box 1097. Phone VAlley 9-3653

Kentucky, Louisville 7: Ogle Engineering Sales Co., 132 St. Mathews Ave. Phone TWinbrook 5-3372

Louisiana, Baton Rouge: H. A. Ferguson & Assoc., 2657 Edward. Phone DIckens 4-7719

Tennessee, Knoxville: Rogers & Morgan, 802 Nineteenth St Phone 3-7942

Tennessee, Memphis 4: R. E. Overman Co., 2065 Union Ave. Phone BRoadway 5-0844

Virginia, Arlington 9: Farrell D. Johnson, Box 9134, Rosslyn Station

A. C. HORN COMPANIES, 2133 85th St., North Bergen, N. J.

Alabama, Fultondale: William J. Lane, Jr., P. O. Box 339. Phone VIrginia 1-8003

Florida, Fort Lauderdale: James F. Jacobson, 1218 S.W. 20th St. Phone JAckson 2-2097

Florida, Gulfport: Ernest A. Plante, 4401 27th Ave., South

Florida, Jacksonville: Ted Rasmussen, 3116 Greefeild Circle. Phone EXbrook 8-5419

Florida, Pensacola: C. F. Murph, 7402 W. Jackson St. Phone GL 5-3535

Georgia, Atlanta: Harry S. Hart, A. C. Horn Companies, 225 Moore St., S.E. Phone MUrray 8-6232

North Carolina, Charlotte: O. A. Wall, Box 2184. Phone EDison 3-4949

North Carolina, Raleigh: Charles Koonce, 319 East Jones St. Phone TEmple 2-9752

South Carolina, Columbia: George Black, 2504 Monroe St. Phone AL 4-1870

Tennessee, Knoxville: Burton L. Smith, 2627 Linden Ave. Phone 523-0024

Tennessee, Memphis: John L. Geberdine. P. O. Box 6491. Phone JAckson 7-3463

INDUSTRIAL PAINT MFG. CO., 915 North 33rd St., Birmingham 1, Alabama

Alabama, Mobile: Induvall Paint Center, 1300 Dauphin St. Phone HE 2-3125

Alabama, Montgomery: Induvall Paint Center, 1717 Norman Bridge Road. Phone 263-8130

Alabama, Tuscaloosa: Induvall Paint Center, 1500 Tenth St. Phone PL 9-2710

Louisiana, New Orleans: A. L. Lacamp, 3801 Napoleon. Phone TW 8-8271

Mississippi, Columbus: Perkins-Parsons Co. Phone FA 8-8271

INERTOL CO., INC., 480 - 490 Frelinghuysen Ave., Newark 12, N. J.

Alabama, Birmingham 13: L. E. Sturgis, 2550 Beverly Drive. Phone TRemont 9-5441

Georgia, Hapeville: C. A. Letz, Jr., P. O. Box 387. Phone (Atlanta) PO 7-8561

Louisiana, New Orleans 22: Glenn Porter, 2538 Frankfort St. Phone JAckson 5-6817

North Carolina, Charlotte 4: Purser & London, Inc., 1317 East 4th St. Phone EDison 3-7549

Texas, Dallas 6: C. H. Hartman, P. O. Box 4904. Phone TAylor 3-4933

Virginia, Arlington 4: Earl H. Lee, 2508 Arlington Blvd. Phone JAckson 5-4773

INTERNATIONAL PAINT COMPANY, INC., 628 Pleasant St., P. O. Box 5124, New Orleans 15, La.

Alabama, Mobile: Mobile Ship Chandlery Co., Inc., Dauphin & Commerce Sts., P. O Box 149. Phone HEmlock 2-8583

Florida, Jacksonville 1: Jacksonville Ship Chandlery & Waning Co., 835 E. Bay St. Phone ELgin 3-1296

Florida, Miami 36: Paul's Boat Supply, Inc., 611 S.W. Third Ave. Phone FR 4-8210

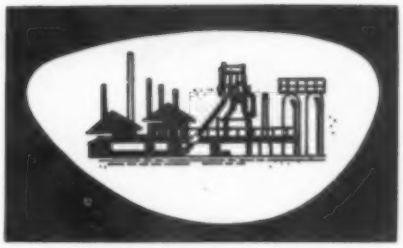
Florida, Tampa: Bert Lowe Supply Co., 416 Ellamae St., P. O. Box 2820. Phone 2-4278

Louisiana, Baton Rouge 5: Neptune Supplies, Inc., 2436 Weller Ave., Box 3187—Istrouma Sta. Phone ELgin 7-3118

Louisiana, Morgan City: Rio Fuel & Supply, Inc., 1015 S. Front, P. O. Box 1279. Phone 459-5033

Louisiana, New Orleans 14: T. M. Reinhardt, Southern Dist. Mgr., 628 Pleasant St., P. O. Box 5124. Phone TW 1-4435

Mississippi, Greenville: Marine Welding & Repair Works, 204 S. Walnut St. Phone ED 2-2616



Mississippi, Gulfport: Kremer Marine Supply, 1428 22nd Ave. Phone UN 3-2545

Texas, Corpus Christi: San Antonio Machine & Supply Co., P. O. Box 971. Phone TUlip 2-6591

Texas, Galveston: Texas Marine & Industrial Supply Co., 1828 Strand. Phone SOuthfield 3-2406

Texas, Harlingen: San Antonio Machine & Supply Co., P. O. Box 671. Phone GArfield 3-5330

Texas, Houston 12: Texas Marine & Industrial Supply Co., 8106 Harrisburg Blvd., P. O. Box 5218. Phone WAlnut 3-9771

Texas, Orange: Marine & Petroleum Supply Co., P. O. Box 278. Phone TUxedo 3-4323

KOPPERS COMPANY, INC., Tar Products Division, Koppers Bldg., Pittsburgh 19, Pa.

Alabama, Birmingham 9: H. W. Hensel 2572 Mountain Woods Drive, Vestavia

Florida, Jacksonville 11: E. E. Sandberg 10567 Serena Drive

Georgia, Roswell: J. E. Carvlin, 43 Sullivan Road

North Carolina, Charlotte: J. W. Tyson, Jr., P. O. Box 1688

Tennessee, Nashville 5: F. J. Sullivan, 102 Alton Road

LINCOLN ENGINEERING CO., Division McNeil Machine & Engrg. Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

Georgia, Atlanta 18: Lincoln Engineering Co. (Atlanta), 1854 Marietta Blvd. Phone 794-7661

LION OIL COMPANY DIVISION, Monsanto Chemical Company, Lion Oil Bldg., El Dorado, Arkansas

Georgia, Decatur: R. L. Hager, 2477 North Decatur Road. Phone DRake 3-7003

Texas, Houston 18: John W. Walker, 5401 Verdome Lane. Phone OVerland 2-5072

Reference Guide and Buyer's Directory for the South-Southwest

MARINDUS COMPANY, INC., Box 286, Woodcliff Station, North Bergen, N. J.

MARKAL COMPANY, 3052 W. Carroll Ave., Chicago 12, Ill.

METAL AND THERMIT CORPORATION, P. O. Box 471, Rahway, N. J.

Georgia, Atlanta: Metal & Thermit Corp., 565 Western Ave., N.W. JAckson 3-0415

Georgia, Atlanta: Bennet Brooks, 10 Alden St., N.W., Apt. 16.

Kansas, Prairie Village: Richard A. Brown, 5640 W. 82nd St., Prairie Estates

MINNESOTA PAINTS, INC., 1101 Third St. South, Minneapolis 15, Minn.

Georgia, Atlanta 11: L. J. Tasse, 1024 Veltre Circle, S.W.

Georgia, East Point: L. B. Browne, 616 Dorsey Ave. Phone PO 1-5249

Georgia, LaGrange: D. D. Wyatt, Box 346. Phone TU 4-8488

Georgia, Marietta: M. J. Davis, 412 Scott Drive. Phone 428-3505

South Carolina, Belton: C. S. Morgan, Box 446. Phone ED 8-3372

Texas, Dallas 35: H. K. Hansen, 737 Regal Row. Phone FL 2-1744

MOBILE PAINT MFG. CO., INC., P. O. Box 1686, Mobile, Alabama

NAPKO CORPORATION, 5300 Sunrise St., Houston 21, Texas

Alabama, Birmingham: Napko Paint Company, 2700 Warrior Road. Phone ST 7-0661

Louisiana, New Orleans: Napko Paint Company, 7800 Earhart St. Phone UN 6-6323

Texas, Dallas: Napko Paint Company, 1525 Stemmons Expressway. Phone RI 2-4303

NATIONAL CHEMICAL & MFG. COMPANY, Luminall Paints Division, 3617 South May St., Chicago 9, Ill.

Arkansas, Little Rock: W. N. Pyron, 1921 S. Monroe

Florida, Tampa: James S. Knight, 4507 St. Vincent Drive

Kansas, Pittsburg: Merlin Kirk, 406 W. 9th St.

Kentucky, Louisville: Joseph S. Hudspeth, 3106 Radiance Road

North Carolina, Charlotte: Mark Estridge, 2411 Purser Drive

Texas, Amarillo: S. H. Onstott, 1904 Cedar St.

Texas, Austin: Tom Appling, 2708 Gerachty

Texas, Dallas: Fred A. Eggert, 11615 Cimarec St.

NATIONAL LEAD CO., 111 Broadway, New York 6, N. Y.

Georgia, Atlanta 9: Clyde S. Lea, 451 Bishop St., N.W. Phone TRinity 6-7631

Texas, Dallas 16: Mark Kelly, 1000 Sargent Road. Phone WHitehall 8-3521

PAASCHE AIRBRUSH COMPANY, 1909 Diversey Parkway, Chicago 14, Ill.

Florida, Bradenton: E. P. Brose, 1816 26th St., West. Phone 5-4604

Georgia, Atlanta 9: Pete LaVoie, 100 Biscayne Dr., N.W.

Texas, Garland: Ed Miller, 1417 Walnut St.

PERMACEL, New Brunswick, N. J.

Georgia, Atlanta: 1081 Dill Ave., S.W. Phone PLaza 8-2651

Texas, Dallas: 3505 Turtle Creek Blvd. Phone LAkeside 6-7969

PERMASPRAY by Leonetti Enterprises, 1220 Polk, Houston 2, Texas

Louisiana, New Orleans 22: David Bernhardt, Jr., 2801 Frenchmen, P. O. Box 8173. Phone WH 7-2188

Texas, Fort Worth 15: O. G. Pierson, 5629 Westcreek Drive. Phone AXtel 2-2824

PERMATEX COMPANY, INC., 300 Broadway, Huntington Station, New York

Florida, Miami 57: Michael L. Sullivan, 9520 Thanksgiving Drive. Phone CEdar 5-3682

Texas, Houston: Robert Brandes, Park Towers, 1700 E. Holcombe Ave. JAckson 2-4086

PHILADELPHIA QUARTZ COMPANY, 1146R Public Ledger Bldg., Philadelphia 6, Pa.

Georgia, Atlanta 6: Richard D. Greenway, 1732 Wilmont Drive, N.E. Phone MElrose 4-0195

PITTSBURGH CHEMICAL COMPANY, Grant Bldg., Pittsburgh 19, Pa.

Florida, Jacksonville 10: R. G. Chambers, 3732 Rodby Drive. Phone SPring 1-5167

Oklahoma, Tulsa 12: A. Z. Partain, 1838 South Hudson. Phone NAtional 5-2678

Texas, Houston: Regional Sales Office, 3115 Buffalo Drive. Phone JAckson 3-8351

PORTER PAINT CO., INC., Box 1439, Louisville 1, Ky.

Alabama, Huntsville: Van Valkenburgh Bros., 816 Wheeler Ave., N.W. JEfferson 2-3546

Florida, Tampa: Porter Paint Co., 1102 Whiting St. Phone 2-0386

Georgia, Decatur: T. L. Griffin & Son, 1677 Lawrenceville Road. ME 6-5744

Kansas, Topeka: Roach Hardware Co., 1321 W. 21st St. CEntral 3-9606

Kentucky, Lexington: Porter Paint Co., 283 E. High St. Phone 2-3808

Kentucky, Louisville: Porter Paint Co., 801 S. Third St. JU 3-2701

Missouri, Kansas City: Schutte Lumber Co., 3001 Southwest Blvd. VAlentine 1-4600

Missouri, St. Louis: Porter Paint Co., 6717 Clayton Road. PA 7-4777

North Carolina, Winston-Salem: Pleasant's Hardware, Inc., 1035 Northwest Boulevard. Phone 723-1181

Tennessee, Nashville 3: Beasley & Sons Co., 147 Third Ave. ALpine 5-3163

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Florida, Tampa: B. B. Mullis, Metalcoat, Inc., Mulberry, Fla. Phone HA 5-1185

Georgia, Atlanta 5: Stanley C. Powers, 254 E. Paces Ferry Rd., N.E. Phone CEdar 3-9494

Louisiana, New Orleans: Herb Irish, Rt. 1, Box 307, Covington, La. Phone (Covington) 576

North Carolina, Charlotte: John Davis, 4020 Broadview Drive. Phone JA 3-8767

Tennessee, Chattanooga 11: Frank A. Ricketts, 3630 Weldon Drive. Phone MA 9-7175

QUELCOR, INC., Front & Broom-all Streets, Chester, Pa.

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Kansas, Wichita: Carl Davis, E. E. Sharp & Associates, P. O. Box 3673

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Louisiana, New Orleans: Gulf Polyplastics, Inc., 3241 Saint Thomas St.

Missouri, Kansas City: Elmer E. Sharp & Assoc., P. O. Box 8406. Phone LO 1-8500

Missouri, St. Louis: Keith Goding, E. E. Sharp & Assoc., 1757 Topping Road

Oklahoma, Tulsa: Herman Amelon, E. E. Sharp & Assoc., 1343 East 46th St. Phone RI 3-5750

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ROYSTON LABORATORIES, INC., First St. (Blawnox), Pittsburgh 38, Pa.

Georgia, Decatur: E. M. Steinmann, 522 N. McDonough. Phone DRake 8-9690

Oklahoma, Tulsa: R. A. Walton, Box 1753. Phone LUther 2-3039

Tennessee, Signal Mountain: H. M. Love, 304 Dawn St. Phone (Chattanooga) TUcker 6-2655

Texas, Houston: W. R. Curley, Box 8188. Phone JAckson 9-6659

Texas, Midland: L. R. Wood, 1605 Ventura. Phone MUtual 2-0642

THE RUBEROID COMPANY, 733 Third Ave., New York 17, N. Y.

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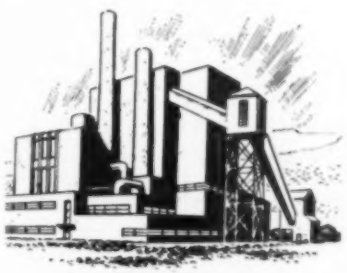
Texas, Dallas: F. Schmitt, Jr., Sales Manager, District Sales Office, Singleton Road. Phone FEderal 1-3291

RUST-OLEUM CORPORATION, 2425 Oakton St., Evanston, Ill.

Florida, St. Petersburg: J. W. Prevatt, 7912 Third Ave. Phone DI 5-8779



Mississippi, Rolling Fork: O. B. Casanova, P. O. Box 456. Phone 662

North Carolina, Chapel Hill: Henry Hurlburt, P. O. Box 1288. Phone 9-6177

Tennessee, Nashville: H. W. Edwards, Sr., Tuck Bldg., 1123 Church St. Phone AL 6-0247

Texas, Dallas: Miss M. McConnell, 3200 McKinney Ave. Phone LA 8-7453

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SPECO, INC., 7308 Associate Ave., Cleveland 9, Ohio

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Georgia, LaGrange: Clyde O. Cronic, 606 N. Greenwood St. Phone 8742

Louisiana, Belle Chasse: Lewis J. Oakes, Box 262, Route 1. FOrest 1-2138

Louisiana, New Orleans 4: C. S. Phillips, P. O. Box 1107. MAgnolia 4561

Oklahoma, Oklahoma City: Orville Henderson, 3820 N.W 22nd St.

Oklahoma, Oklahoma City: Lewis A. Poynter, 2808 N.W. 44th St. WIndsor 2-3321

Texas, Houston 17: Henry Stein, 7011 Sloan St. OLive 4-6492

SPEE-FLO COMPANY, 6614 Harrisburg, Houston 11, Texas

Alabama, Birmingham: Ed Thomas, P. O. Box 7651. Phone TR 9-3830

Florida, Miami 68: Chas. H. Mitchell, 14095 N.W. 6th Ave. Phone MU 1-8423

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Georgia, Atlanta 7: J. Edwin Kerr, 802 Lullwater Rd., N.E. Phone DR 3-0203

Mississippi, Jackson: R. T. Douglas, P. O. Box 9224, Bratton Sta. Phone FL 5-2885

Missouri, St. Louis 28: Herbert Hansen, 10808 Leebur Drive. Phone VI 3-3800

North Carolina, Charlotte: Joe N. Williamson, 329 Circle Ave. Phone ED 4-3504

Texas, Houston 18: Bill Spence, P. O. Box 10682. Phone JA 9-7053

SUBOX INC., Fairmount Plant, Hackensack, N. J.

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Arkansas, Pine Bluff: M. L. Cooper, 3501 Olive St. Phone JE 4-2530

Georgia, Atlanta 18: Roy E. Wilson Co., 1062 Northside Drive, N.W. Phone TR 6-8833

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Louisiana, New Orleans 12: C. F. Dunn, 519 S. Peters St. Phone JA 5-5423

Louisiana, Shreveport: R. B. Williamson, 104 Edwards St. Phone 424-6638

Mississippi, Jackson: S. C. Commander, Box 4686, Fondren Station. Phone EM 2-1142

Missouri, Kansas City 33: Williams & McKinley Sales Co., 10101 East 65th St. Phone FL 6-5700

Missouri, St. Louis: Williams & McKinley Sales Co., 1344 Wilton Lane, Kirkwood 22. Phone YO 6-5694

Oklahoma, Tulsa: George Demecs, 6404 East 15th Place. Phone TEmple 6-2386

Tennessee, Memphis: Crawford Jordan, Curtis H. Stout, Inc., 718 M&M Bldg. Phone JA 6-7601

Texas, Amarillo: C. L. Bass, 103 S. Pierce St., Box 1860. Phone DRake 4-5474

Texas, Corpus Christi: C. V. Ing, Jr., P. O. Box 52. Phone TU 4-2185

Texas, Dallas 7: O. C. Skeeters, 340 Cole St. Phone RI 1-5831

Texas, Houston 20: P. K. Clifton, 5541 Armour Drive. Phone WA 1-2156

Texas, San Antonio: Dale G. Seay. P. O Box 1324. Phone TA 6-6683

Virginia, Salem: George L. Wallace, 746 Elizabeth Ave., Box 362. Phone DU 9-4306

TRUSCON LABORATORIES, Div. of Devoe & Raynolds Co., Inc., 1700 Caniff, Detroit 12, Mich.

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Florida, Orlando: W. D. Stanford, 1411 Francis Ave. Phone GA 3-6265

Georgia, Decatur: E. F. Strub, 2800 E. Ponce de Leon Ave. Phone (Atlanta) DR 8-4585

Louisiana, New Orleans: W. M. Brackett, 3408 Purdue Drive, Metairie. Phone VE 4-5890

Missouri, Kansas City: B. J. Arnold, 228-34 West 4th St. Phone VI 2-2216

Missouri, St. Louis: H. D. Reddy, 926 Spruce St. Phone CE 1-4167

South Carolina, Greenville: E. C. Aiton, 10 Woodland Lane. Phone CH 4-2264

Tennessee, Memphis: Fischer Lime & Cement Co., Linden & Walnut Sts. Phone JA 6-0211

Texas, Houston: M. L. Shadle, 3915 Weslow. Apt. 15. Phone MI 9-5795

Eastern District Sales: Alvin S. Baer, 79 Madison Ave., New York 16, N. Y.

VIMASCO CORPORATION, Box 465, Nitro, West Virginia

Alabama, Birmingham: North Bros., 4360 Powell Ave., Box 986. Phone WO 1-3791

Florida, Orlando: North Bros., 2715 Regent Ave., Box 7817. Phone CY 3-9221

Georgia, Atlanta: North Bros., 911 Boulevard, Box 252. Phone TR 6-5731

Georgia, Savannah: North Bros., 644 W. River St., Box 1768. Phone AD 3-5774

South Carolina, Columbia: North Bros., Seaboard Park, Box 3203. Phone AL 2-3702

Tennessee, Knoxville: North Bros., 728 Dale Ave., Box 883. Phone 4-2509

Texas, Houston: Precision Insulation, 2931 Holmes Rd., Box 14398. Phone JA 6-3591

THE WILBUR & WILLIAMS CO., INC., 650 Pleasant St., Norwood, Mass.

Florida, Tampa: Robert Lancaster, 4124 Sevilla. Phone 65-5735

Georgia, Albany: Don Coleman, 1312 Eager Ave.

Louisiana, New Orleans: Kittredge V. Dell, 6123 Clara St. Phone UNiversity 6-2341

North Carolina, Asheville: M. R. Kearns, 1215 Haywood Road. Phone ALpine 3-4171

Texas, Houston: Elmer Young, P. O. Box 1294. Phone CA 2-0512

WISCONSIN PROTECTIVE COATING CORP., 614 Elizabeth St., P. O. Box 243, Green Bay, Wisconsin

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Florida, St. Augustine: Engineered Products Co., P. O. Box 1197. Phone VAlley 9-3653

Louisiana, New Orleans 23: Kitco Company, 344 Tudor St. Phone 729-3113

Missouri, St. Louis 8: Van Devanter Engineering Co., Inc., 3974 Delmar Blvd Phone JEfferson 3-1822

Oklahoma, Tulsa 3: Engineering Sales Co., 409 N. Cincinnati. Phone LUther 4-6401

Tennessee, Elizabethton: J. P. Fuller, Inc., Carter County Bank Bldg., Box 88. Phone LIncoln 3-2041

Texas, Dallas 35: B-K Engineering Co., Box 35103. Phone FLeetwood 7-6926

Texas, Houston 27: Plant Specialty Co., Box 22442. Phone SUnset 2-4162

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SOUTHERN POWER & INDUSTRY
a W. R. C. Smith Publication
1760 Peachtree Rd., N.W. Atlanta 9, Georgia

YARWAY news briefs

from **Yarnall-Waring Company,** *Philadelphia 18, Pa.*
ATLANTA OFFICE: 453 IVEY BUILDING, 3330 PEACHTREE ROAD, ATLANTA 3, GEORGIA

IF DEPENDABILITY IS WHAT YOU WANT... GET UNIT TANDEM BLOW-OFF VALVES

New Yarway Unit Tandem Blow-Off Valves for boiler pressures to 515 lbs. wsp* "have what it takes" to give you the dependable protection your boiler investment deserves.

RUGGED, COMPACT DESIGN

Unique design and strong construction combines blowing and sealing valves in a common "unit" body of forged steel block—extra *protection*, extra *dependability*.

DEPENDABLE PERFORMANCE

Design, materials, workmanship add up to *trouble-free performance*. Seatless (sealing) valves are famous Yarway balanced sliding plunger type. Hard-seat (blowing) valves are Yarway welded-bonnet type, with deep stellite seat and disc, non-pitting stainless steel valve stem and special inhibited packing.

EASY MAINTENANCE

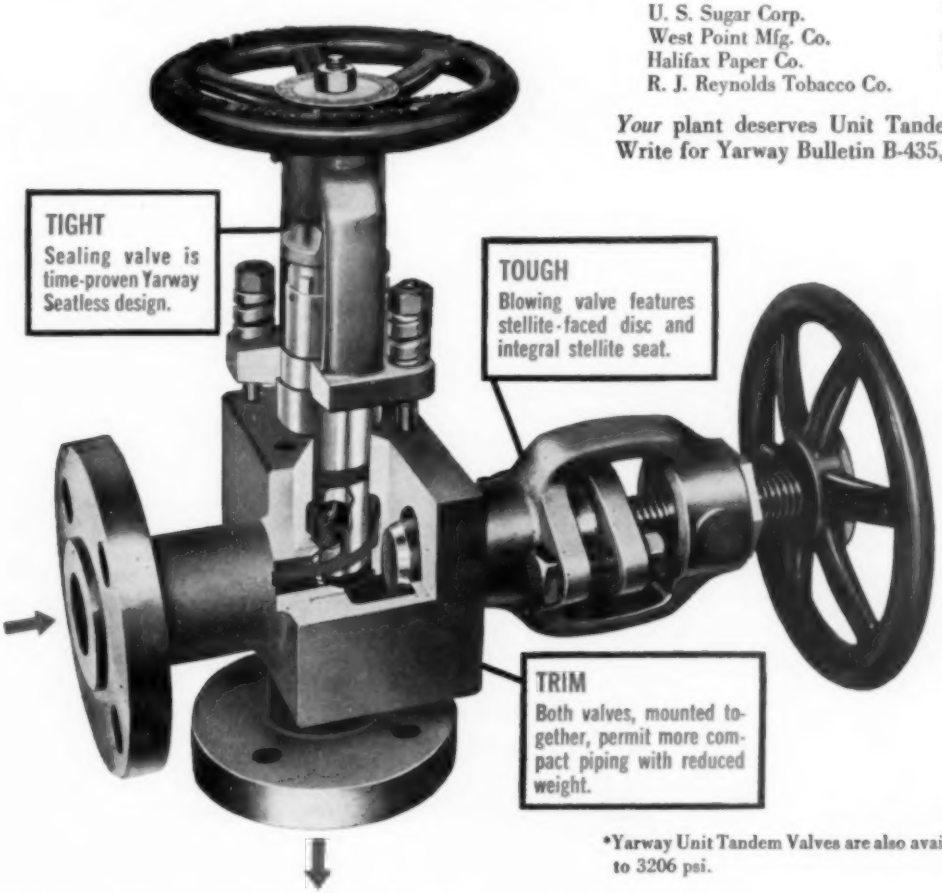
Working parts are easily accessible. Special reseating tool permits actual reseating of hard-seat valve with *valve in the line*.

PROVED ACCEPTANCE

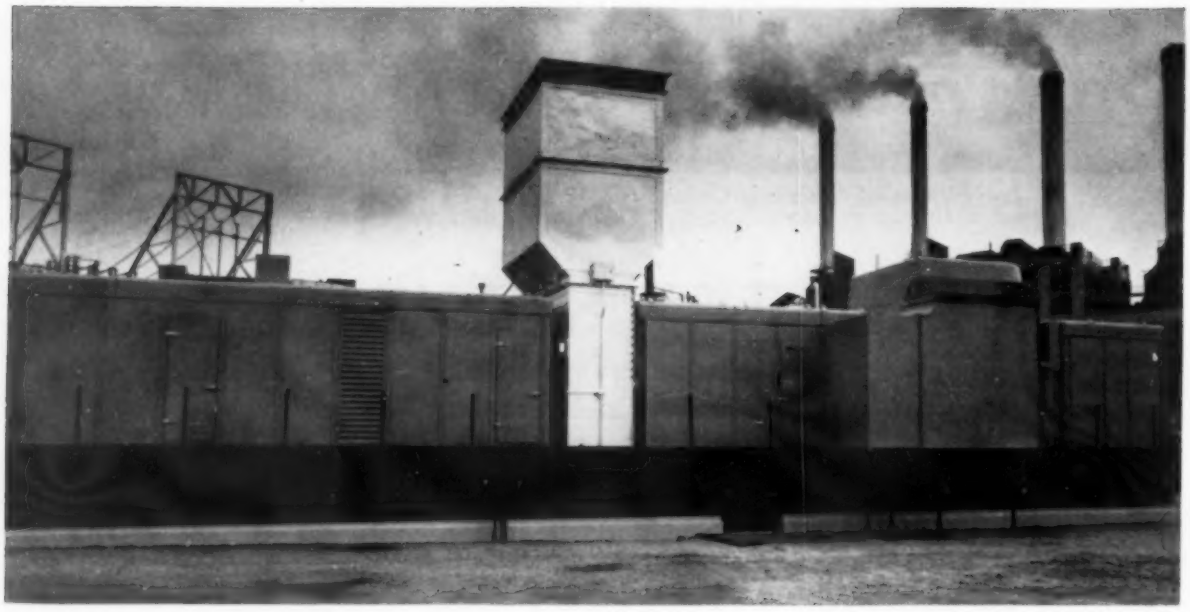
Among hundreds, here are just a few satisfied users of this Yarway valve:

U. S. Sugar Corp.
West Point Mfg. Co.
Halifax Paper Co.
R. J. Reynolds Tobacco Co.
Western Electric Co.
Cornell University
Pulp and Paper Co. of Colombia, S.A.

Your plant deserves Unit Tandem dependability, too. Write for Yarway Bulletin B-435, Supplement A.


TIGHT
Sealing valve is time-proven Yarway Seatless design.
TOUGH
Blowing valve features stellite-faced disc and integral stellite seat.
TRIM
Both valves, mounted together, permit more compact piping with reduced weight.

*Yarway Unit Tandem Valves are also available for higher pressures to 3206 psi.



This 11,250-kilowatt unit has been sold by General Electric's Gas Turbine Department to the South Carolina Electric & Gas Company for installation at Burton, S. C. Here it is seen completely setup at the G-E plant in Schenectady for testing and demonstration prior to shipment.

South Carolina Electric & Gas Co. Purchases Gas Turbines of New Design

First Gas Turbine Package Power Plant

SEVERAL HUNDRED electric utility and industrial engineers recently witnessed test operation of the first General Electric gas turbine package power plant at the factory in Schenectady.

The package power plant was designed to provide a low-cost, remote-controlled, unattended power source that can be erected quickly, and, if required, located in or near residential areas. It can be shipped by rail in four major components, installed and placed in service in approximately 10 days.

The set-up at Schenectady duplicated conditions under which the unit will operate on the customer's system.

Following the three-day demonstration, the gas turbine unit was shipped to the South Carolina Electric & Gas Company which has purchased four of the 11,250-kilowatt units.

According to South Carolina Electric & Gas Company officials, the purchase represents another important development in its continuing efforts to provide low-cost electrical energy to half the counties of South Carolina. The Company has recently installed more than 200 miles of natural gas transmission lines in its 23-county service area, enabling it to capitalize on the versatility of the gas turbine to help assure a continuing supply of low-cost electric power.

The first of the gas turbine package power plants will be installed at Burton, near the Southern extremity of the SCE&G service area. The second unit will be installed at Charleston, the third at Burton, and the fourth at Charleston.

The new package power plant is rated 11,250 - kilowatts for peak service at NEMA conditions—80 F and 1,000 ft altitude. The plant is 80 feet long, 22 feet wide, and 16 feet high.

The plant is designed for remotely controlled unattended operation, while retaining provisions for manned operation. It is completely self-cooled, eliminating the need for any external cooling water supply. Its acoustic treatment permits operation in a suburban area.

For industrial applications both the simple cycle and a regenerative cycle arrangement of the package concept are available. The plant also is readily adapted to combined cycle applications with a steam turbine-generator.

One of the big advantages of the package concept is that less than

5 per cent of the total cost of the station will be expended for the site, and for labor and materials at the site. The entire station can be moved by conventional carriers to a new site.

Using a "building block" approach, G-E's engineers have kept costs low by using considerable standardization while still allowing for flexibility necessary to meet individual customer requirements.

Optional items which may be necessary to meet individual requirements are assigned specific locations in the basic system. The locations were carefully selected to permit the inclusion or exclusion of each item without interfering with the basic system arrangement.

The 11,250 - kilowatt package power plant consists of three basic elements: power unit, generator unit and associated switchgear. Pre-assembled at the factory, these basic elements can be installed and in operation in as little as 10 days after arrival of the equipment at the site. The unit can be started without external auxiliary power, thereby providing maximum system protection during emergency service conditions.

The power unit is the largest and heaviest component. It consists of two assemblies bolted together for shipment, one housing all control panels; the second, the turbine with all accessories and auxiliaries. Overall length of power unit is 42 feet. Control compartment is about 10 feet long and can be detached from the turbine base to facilitate shipment when necessary.

In the control cab of the first South Carolina Electric & Gas Co. unit are modified dual switchboards to control the turbine and generator and, for this unit, an optional remote supervisory station with APRIL (automatic program remote indicating logging equipment). Operation of the package power plant will be handled from inside the control cab or over microwaves from the master station in Columbia, S. C., through the remote station of the package. General Electric's Medium Voltage Switchgear Department supplied the metal-clad and control cab components.

Space beneath the floor of the control compartment contains the station 125-volt battery and battery charger. Roof of the compartment houses a distillate fuel tank providing a fuel supply for the turbine cranking device, and an emergency fuel supply for the turbine to permit operating during temporary failures in the normal fuel supply. A compartment blower in the roof section supplies filtered pressurization and ventilating air for electrical equipment.

The generator unit contains the load gear (4860/3600 rpm); generator, a 50-kw exciter; field breaker and resistor cabinet and generator cooling air filter with open ventilated units.

Armature connections are provided on either side of the unit and located at a suitable elevation above the foundation to permit connection on the metal - clad switchgear. Generator grounding connection is immediately beneath armature connections in base of package. Grounding transformer and arrestors are housed outside the package, either in metal-clad switchgear housing, or in a separate unit.

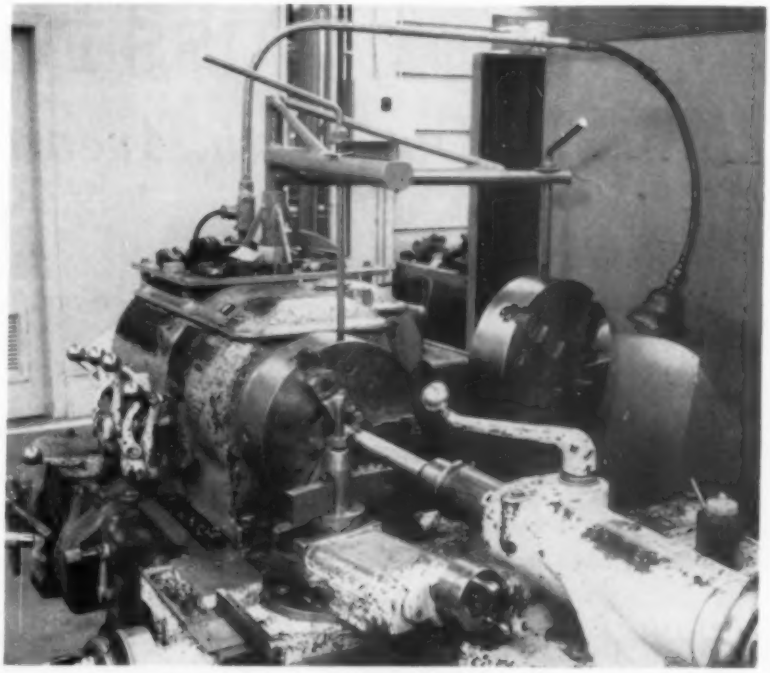
Holder-Installer for Lathe Chucks

BOTH THREE and four jaw chucks, particularly for lathes above 14" swing are too heavy to lift safely by hand and a hoist is not always available. With the device shown here, changes may be made at will and the chucks are always handy. Both chucks can be "stored" on the hanger when using faceplate or working between centers.

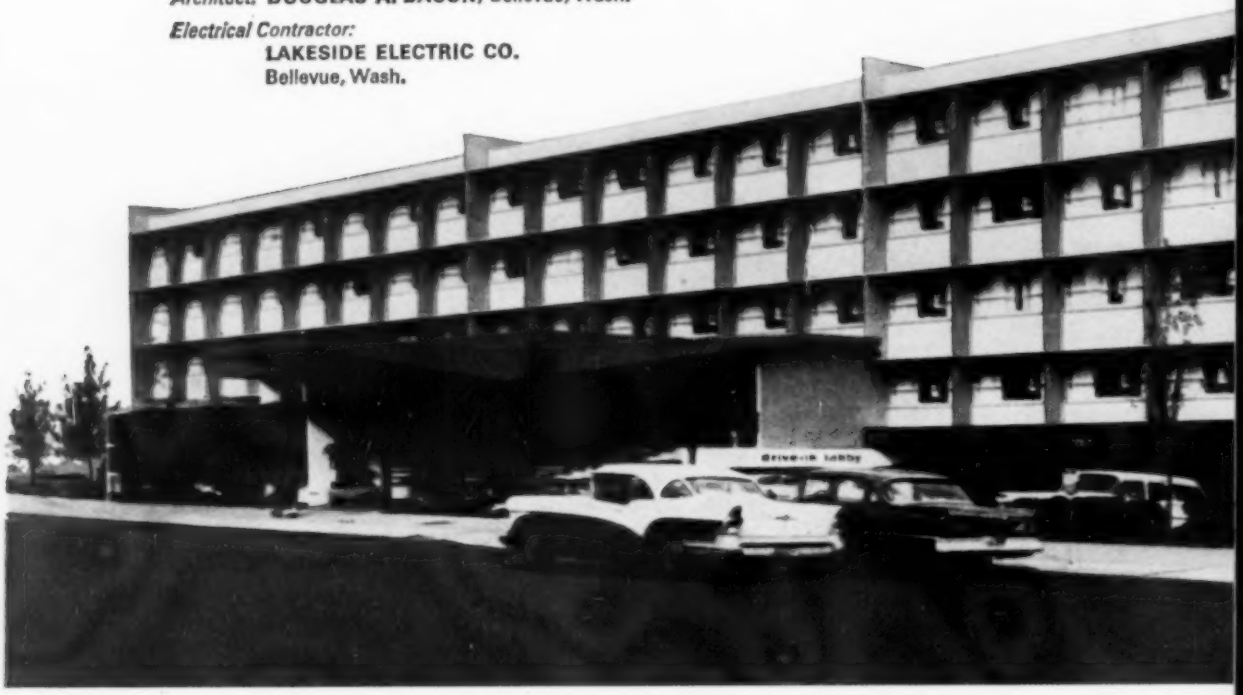
The photograph shows the device in position to attach to three jaw chuck (after removing work piece from lathe), while four jaw chuck is stored on the other arm. Lifting bolts are threaded to match threaded holes in the respective chucks. Arms are slotted so chucks can slide out or in to pass or engage spindle. Base of device is sized to fit headstock of lathe.

This device has proved to be a real time and labor saver in the maintenance shop and tool room and should be advantageous in any job-shop operation where frequent setups are common.

By F. C. CLAYTON, Chief Plant Engineer, General Dynamics Corporation, Convair, Fort Worth, Texas.



Owner: **DORIC CO., Seattle, Wash.**
Architect: **DOUGLAS A. BACON, Bellevue, Wash.**
Electrical Contractor:
LAKESIDE ELECTRIC CO.
Bellevue, Wash.



Electrical Protection goes MODERN *with* BUSS Fuses...

at the Doric 6th. Avenue Motor Hotel, Seattle, Wash.

Travelers staying at this new, luxurious 175 unit motor hotel enjoy the latest conveniences of electrical living. Even the rooms are heated electrically so each person may select the room temperature he prefers.

These modern services require large electrical capacity. As a result, the available fault current is approximately 70,000 amperes.

Safe protection against faults of this magnitude is assured by the BUSS Hi-Cap fuses installed in the main entrance service. These fuses have an interrupting rating of 200,000 amperes rms. symmetrical.

To maintain safe, modern protection throughout the electrical system,—and to safeguard against unnecessary interruptions in electrical service, FUSETRON dual-element fuses are installed in the branch circuit switches.

ANOTHER BUSS HI-CAP AND FUSETRON FUSE INSTALLATION

There is a safe, modern BUSS or FUSETRON fuse with specific characteristics to match your requirements.

Available from BUSS: High interrupting capacity fuses to protect against fault currents up to 200,000 amperes; current-limiting fuses to restrict let-thru fault currents to safe values; long time-lag (dual-element) fuses to prevent needless outages on harmless overloads.

And with Fuses safe protection remains safe. BUSS and FUSETRON fuses are just as safe and accurate 20 years or longer after installation as on the day installed. Dust, fumes, corrosion or age cannot prevent them from opening when they should.

For more information on

FUSETRON dual-element fuses
(loads of 0 to 600 amps.) ..... **write for bulletin FIS**

BUSS Hi-Cap fuses
(loads above 600 amps.) ..... **write for bulletin HCS**

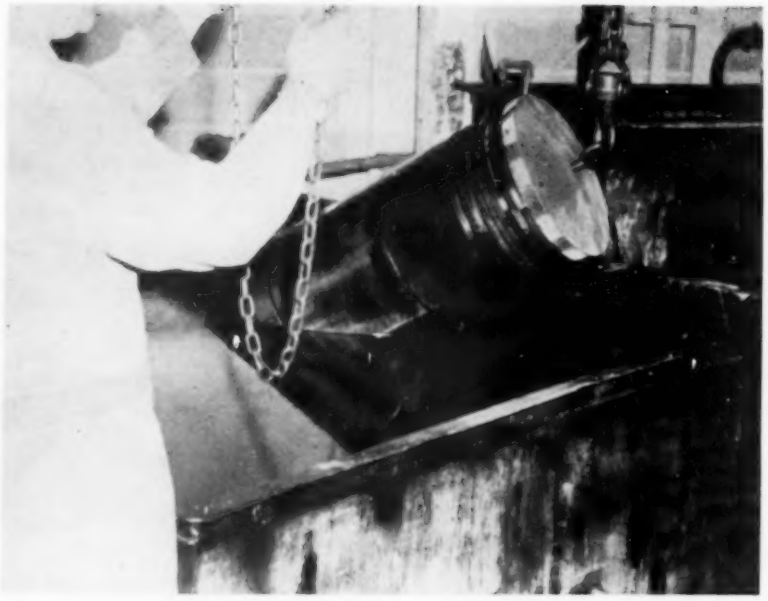
Mr. S. Andrew Sharpe, Manager of Lakeside Electric Co., at main switchboard of Doric Motor Hotel.

Mains and feeders protected with BUSS Hi-Cap fuses. Branch circuits protected by FUSETRON dual-element fuses.

BUSSMANN MFG. DIVISION, *McGraw-Edison Co.* **ST. LOUIS 7, MO.**

Engineer Tells How Oklahoma Company Cuts Maintenance Expense

How to Handle the Cleaning Job



Lowering fouled piston into chemical cleaning vat.

By CECIL L. SAYLORS
Mechanical Engineer, Manufacturing Dept.
Continental Oil Company, Ponca City, Oklahoma

IN CHEMICALLY cleaning compressors and compressor engines, one is concerned mainly with the removal of organic deposits, such as carbon, oil, and varnish, and the removal of cooling jacket deposits inorganic in nature, such as sulfates, carbonates, silicates, and sulfides.

The most effective approach in removing organic deposits requires either (1) a hydrocarbon; (2) a chlorinated hydrocarbon; or (3) a caustic-detergent solution. In many cases a combination of these solvents is most effective.

The best approach for removing an inorganic deposit usually is an inhibited mineral acid. Well inhibited hydrochloric acid is the one most often used at Continental Oil Company's Ponca City Refinery. When silicates and/or sulfates are present in appreciable amounts, we have found that the addition of 1 per cent ammonium bifluoride aids in scale disintegration.

The carbon deposits found on power pistons, rods, compressor valves, and valve cages can be cleaned by (1) mechanically scraping; (2) spraying on a chemical solution; or (3) submerging the part to be cleaned in a chemical cleaning vat (see drawing and photographs).

Vat Cleaning

The least desirable of these methods is the mechanical scraping. The use of a chemical cleaning vat equipped with steam coils is the most desirable way of removing these carbon deposits. The advantages of using a chemical cleaning vat are (1) more effective removal of deposits; (2) less danger of scoring machined surfaces as is likely to happen in mechanically scraping; and (3) less labor required.

There are many commercial compounds on the market made especially for vat cleaning. Most of these compounds for use in vat cleaning for carbon removal are caustic-detergent solutions, which generally are strongly caustic materials.

The part to be cleaned is submerged in the vat, the temperature is brought up to 140-200 F, and it is allowed to soak for from a few minutes to several hours depending upon the severity of the deposit. The part is then removed from the vat and steamed or brushed off. The cleaning solution can be used repeatedly.

We not only clean compressor components but valve and pump components. The vat is in use almost constantly, and yet we recharge the vat with fresh chemical only three or four times a year. The cost of the working solution is 15.5 cents per gallon.

Limitations

Caustic solution should not be used in vat cleaning components that have zinc die cast, lead-tin, or aluminum alloys parts. When cleaning parts which have these alloys, a hydrocarbon and chlorinated hydrocarbon mixture is sprayed onto the part to be cleaned and allowed to soak for an hour or so and then is steamed off. Deposits that are rather heavy may require several applications of solvent.

Removing "Varnish"

Another organic deposit that has caused much concern is varnish. Usually when a mineral oil is used

as the lubricating oil, varnish deposits are found in the crank cases of compressor engines.

The varnish can be removed by spraying a hydrocarbon and chlorinated hydrocarbon mixture into the crank case and allowing it to soak for 30 minutes to an hour. The solvent is then mopped out. The composition of this solvent is 25 per cent trichloroethylene, 70 per cent Stoddard solvent, and 5 per cent perchloroethylene With heavy duty detergent oil and full-flow filters, the varnish problem does not exist.

Scale

Scale in the cooling water jackets is removed by acid washing. This scale is the easiest and least expensive to remove. The scale normally found in cooling water jackets is dependent on (1) the type cooling water system used, i.e., closed or once through; (2) kind of water, steam condensate, or cooling tower water; and (3) the effectiveness of treatment.

In the average treated condensate system, one is likely to find iron oxide as well as iron oxide sludge. And, of course, if there are leaks in any of the pumps in the system, you will also find an oil film and/or oil-water emulsion.

This type deposit and scale can be removed by first opening all cleanout plates and flushing out the loose material with water under pressure. The plates are then replaced, and the system is acid washed with a solution of 10-25 per cent well inhibited 20 degrees Baume hydrochloric acid. If there is a small amount of oil present, the addition of 0.1 per cent of an acid compatible detergent will be sufficient to remove the oil.

The acid solution is circulated at 110-120 F. The temperature should be carefully controlled and not allowed to exceed 120 F. This is the accepted temperature limit of hydrochloric acid on cast iron.

The proper circulation time is determined by taking a sample of the acid solution every 30 minutes and titrating. If the acid concentration levels off at 3 per cent or higher, the cleaning action is considered complete.

The solution is then dumped and the jacket flushed with water for 30 minutes. The residual acid is neutralized by circulating (at 180-200 F) water containing 10 pounds of soda ash per 100 gallons of solution for one to two hours.

If the oil-water emulsion is heavy, a two-phase cleaning system will be required. First, a caustic-detergent solution is circulated at 180-200 F for two hours for oil removal, after which the system is flushed with water for one hour. The system is then acid washed as described above.

Cleaning the water jackets every two years is sufficient to keep them free of scale and sludge where well treated condensate is used as the coolant. We have found, however, that cooling jackets using treated plant water on a once-through basis require cleaning at more frequent intervals.

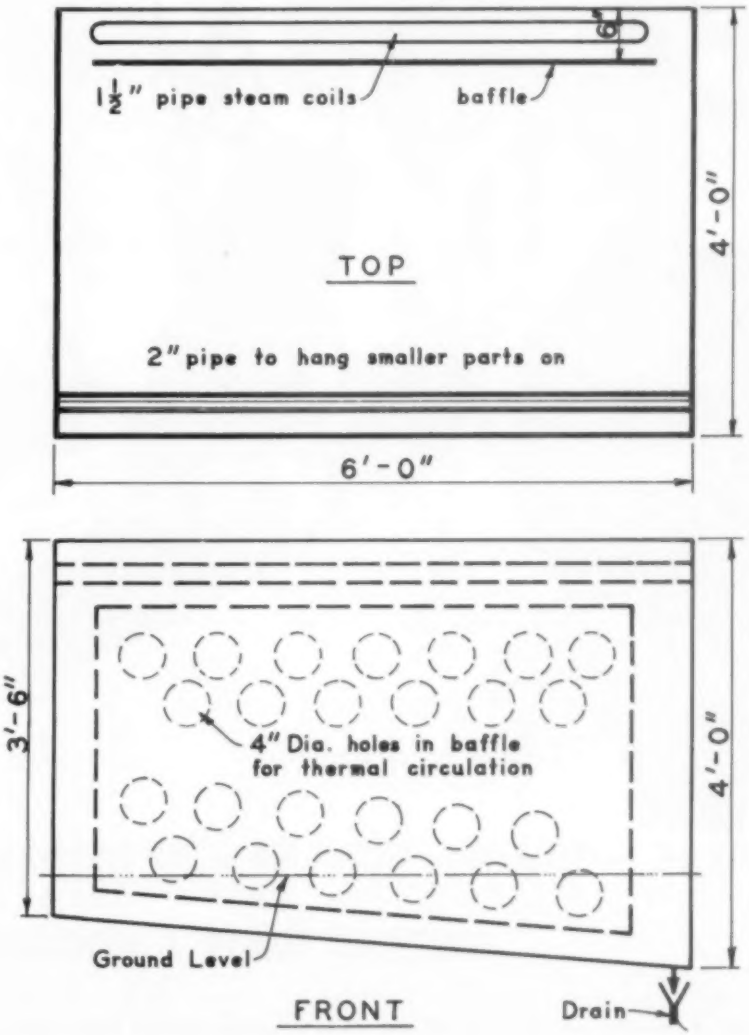
Cooling jackets using treated plant water have carbonates, silicates, sulfates, and manganese dioxide scale. This is removed by using a 10-25 per cent solution of inhibited hydrochloric acid intensified with 1 per cent ammonium bifluoride on the average of once a year.

Chemical Cleaning Pays

Chemical cleaning insures a more efficient job at less cost, which promotes longer trouble-free on-stream time with more efficient compressor operation.

Chemical cleaning certainly pays.

Drawing of chemical cleaning vat used by Continental Oil Company's Manufacturing Department at Ponca City, Oklahoma.



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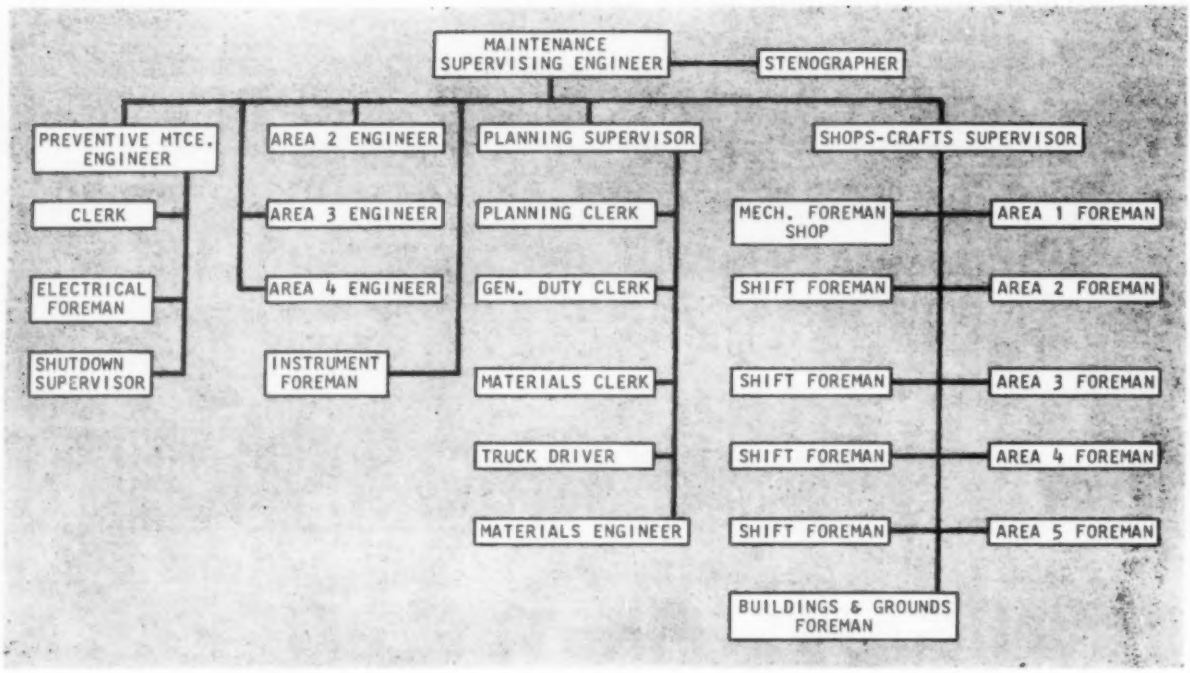


Change-Over to Planned Maintenance

By H. H. WIGGINS

Supervising Engineer
Goodrich-Gulf Chemicals, Inc.
Institute, West Virginia

THE CHANGE-OVER from unscheduled maintenance to Planning and Scheduling results in so much improvement that it is hard to realize why the old system was ever used.

A little over a year ago, the maintenance in this plant was done on work orders that were passed out to the various craft foremen at a daily maintenance meeting. The group assembled at this meeting consisted of the Production Manager, Plant Engineer, Maintenance Engineer, Production and Maintenance General Foremen and Foremen.

The meetings usually lasted an hour and a half and at times became quite heated. One of the reasons for the hot debates was that each craft supervisor was trying to maintain the entire plant and simply could not get around to all the places where work was needed each day. As a result, many times the maintenance personnel were not informed on a particular problem and could not give up-to-the-minute answers on the status of a job.

A study of the geographical layout of the plant was made and the plant was divided into five areas. The work order load was used in laying out boundaries. A manual of operations for the Maintenance Department was prepared covering such things as: (a) Management Control Reports (b) Procedure on Daily and Routine Maintenance (c) Job Descriptions and (d) Organization Chart.

The Management Control Reports consisted of Work Load Vs. Work Load Reports, Productivity Reports, Scheduled Compliance Reports, Emergency Job Reports, Cost Reports, and Inactive and Surplus Stores Reports.

The Maintenance Procedure included such items as Origin of Work Request, Definition of Priorities, Estimating Work Content of Job, Planning and Scheduling the Work, Responsibilities of Area Foremen, and Control of Emergency Orders.

The Job Description Section included such jobs as:

(1) The Area Engineer is the liaison agent between Production and Maintenance. He receives and processes all requests for maintenance work in his area. He estimates the job and lists material needed for execution of the work. He acts as inspection agent for Production (equipment owner) following completion of work to insure that the work has been satisfactorily performed.

(2) The Planning Supervisor has the direct responsibility for planning and scheduling the work systematically and in advance of actual work execution. The Planning Supervisor is responsible for the preparation and issuance of the daily work schedule.

(3) The Supervisor of Shops and Crafts is responsible for the administration of the hourly paid Maintenance Work Force. This job is one of great responsibility and takes a man with understanding and drive. In the change-over to Planning and Scheduling, he must take the place of all the former craft foremen in handling the

administrative needs of his men. His door must always be open and he must receive all requests for help from his men. He maintains all records on personnel such as attendance reports, time cards, overtime lists, accident reports, etc. He is chairman of a committee on promotions and upgrading of hourly personnel.

(4) The Area Foreman is responsible for the direct supervision of all work performed in his area by Maintenance Department craftsmen. By following the schedule furnished him each day, he assigns men to various jobs and insures that they perform their tasks in a workmanlike manner. He must see to it that his men have the proper tools and material to perform the job. Each day he reports by telephone twice to the Planning and Scheduling Supervisor on the progress of work in his area. He also notes on his copy of the schedule as the day progresses the work progress on jobs in his area. This information, plus any remarks, is sent to the Planning Section each afternoon to aid the Planning and Scheduling supervisor to develop subsequent schedules.

(5) The Preventive Maintenance Engineer is responsible for the development and administration of the Preventive Maintenance program. He maintains records on every piece of equipment in the plant which show the maintenance history of that piece of equipment.

Organization Chart

The organization chart is, of course, essential in preliminary studies on the change-over from craft supervision to area supervision. Using a list of all supervisory personnel in the Maintenance Department, the various positions were filled as shown on the chart. All craft foremen and general foremen positions except the Electrical and Instrument crafts were abolished. There was quite a stir created when this move was first done, but now a year later, very few derogatory comments are heard.

When the tentative Manual of Operations was complete, it became a tool to sell the program to both Maintenance and other plant personnel. This is probably the most important phase of the program. It must be accepted by management as a whole and by all plant personnel as individuals.

We had some die-hards to convince that it would work. Some, a year later, see it working and still refuse to give it wholehearted support. Call this inertia or whatever you wish, but need for selling the program to all concerned cannot be overemphasized. For one thing, if each Area Production Supervisor does not put the proper priority on a work order, the schedule becomes meaningless.

Our priorities are: No. 1 — Work must start within 24 hours or the company will suffer appreciable financial loss; No. 2 — Less urgent, but must begin within five working days; No. 3 — Timing not immediately important; S — Shutdown work, such as a boiler overhaul; and E — Emergency — Safety of human life involved or production is now being lost (such as a burned out motor).

Each person writing a work order must have enough respect for the entire plant program to properly write the work order and assign a realistic priority based on the above definitions.

Change-Over Procedure

In order to make the change to Planning and Scheduling, meetings were arranged for supervisors and all parts of the program were discussed. Questions were answered and a target date was set to begin the program. A meeting was also held in which all craftsmen were in attendance. The objective of this meeting was to notify the hourly personnel about the change.

In implementing the program, the men were assured that no one would be hurt by it, but that the quality of maintenance would be improved. They were also advised to discuss any problem they had with the Area Foreman where they were assigned, and if the problem was of any magnitude it would be referred to the Shops and Crafts Supervisor.

It was decided early in the game that increased output by the craftsmen as a result of planning and scheduling would permit us to improve the quality of maintenance and that any excessive manpower would be eliminated by attrition over a period of time. In this way there would be no morale problem because of impending layoffs resulting from the new program.

Problems and Advantages

Some of the problems we have encountered in implementing the program are:

(a) Reluctance on the part of both maintenance and production to believe it would work initially.

(b) Getting work orders written and placed in the stream to get work done.

(c) Getting foremen to "go to work."

(d) Getting all plant personnel to accept the fact that jobs over 30 minutes duration must be scheduled.

Some of the advantages are:

(a) Assignment of foremen to specific areas is one of the greatest advantages. Now each foreman knows what is going on in his area because it is not too large. He can quickly answer almost any question on the condition of equipment in his area.

(b) We know through our management control reports, the backlog we have, the schedule compliance, the number of emergencies and the cost of maintaining equipment.

(c) We have improved the productivity of our craftsmen by scheduling work and having material available.

(d) We are able to defend our manpower requirements much more intelligently.

(e) Quality of maintenance has improved.

The preparatory phase of the program required about four months and the actual program has been in use for about a year. The results are gratifying. We are sold on Planning and Scheduling.

Atomic Developments.....

A MEANS of substantially increasing the over-all efficiency of atomic power plants through use of high-temperature gas-cooling combined with a uranium-thorium fuel cycle was described recently at Rome, Italy before the sixth annual Nuclear Congress sponsored by the Italian National Committee for Nuclear Energy.

Dr. Peter Fortescue, chief research and development engineer of General Dynamics Corporation's General Atomic Division, discussed the advanced design characteristics and economic potential of the High-Temperature, Gas-cooled Reactor System (HTGR), including the opportunities opened up for a major improvement in efficiencies.

Mr. Fortescue said over-all plant efficiencies of more than 40 per cent, including all auxiliaries and blower power, are indicated for large-scale HTGR power stations of around 300,000 electrical kilowatts having re-heat steam cycles. This compares, he said, with typical efficiencies of about 32 per cent quoted for presently-projected nuclear power concepts.

The 40 per cent over-all efficiency can be achieved in large HTGR plants, he explained, without raising the fuel and gas-coolant temperatures beyond those already established for the 40,000 kilowatt HTGR prototype plant to be built at Peach Bottom, Pa.

The HTGR concept has been selected by seven electric utility companies of New York state for large-scale development aimed at the objectives cited by Mr. Fortescue. The seven companies, organized as Empire State Atomic Development Associates, Inc., have joined with General Dynamics in a three-year program for the development and design of a nuclear plant of 300,000 to 500,000 kilowatt capacity.

The program's ultimate goal is construction of a large plant capable of producing nuclear power competitive in cost with that generated from the burning of fossil fuels in New York state.

Design of the HTGR-type plants in the 100,000 and 150,000 kilowatt range also is under way.

Mr. Fortescue said the HTGR prototype plant at Peach Bottom is designed to "demonstrate in a commercial-sized plant those features which, in large systems, are believed to be necessary for the attainment of economic nuclear power through effective use of modern steam conditions."

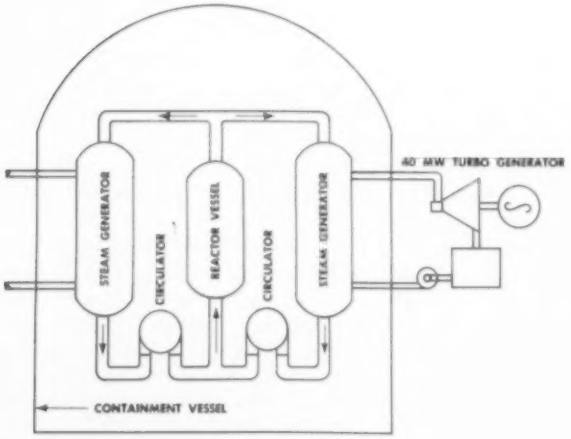
The prototype will be built for the Philadelphia Electric Company and 52 other electric utility companies located throughout the United States and organized as High Temperature Reactor Development Associates, Inc. The prototype — as the first limited-size application of the advanced HTGR concept — will have a net plant efficiency of approximately 34 per cent.

Mr. Fortescue told the Nuclear Congress that most existing nuclear plant designs have an over-all efficiency rating lower than 32 per cent.

"But even if we accept that figure as being typical for the other advanced, presently-projected concepts, it still means that when we speak of 40 per cent efficiency we are talking about a 25 per cent increase in useful power from the same thermal rating as that of the HTGR prototype plant," he said.

"This increased efficiency goes directly into reducing the unit cost of the reactor part of the plant. As a matter of fact, the high heat rating of the HTGR system affects all of the plant in one way or another . . . it generally turns out that the influence of efficiency is even more valuable in its indirect effect on capital cost than in its direct effect on fuel cost.

"These efficiency figures by no means exhaust the possibilities, even within the reactor temperature limits of the HTGR prototype. For instance, by use of a free-running gas turbine coupled directly to the gas circulator in combination with a conventional steam plant, a further 6 or 7 per cent useful output can be obtained from the same reactor, without burning any additional fuel. Substantial development work is required before



THE PLANT ENERGY source for the 40,000 kw prototype at Peach Bottom will be a graphite moderated, gas cooled reactor fueled with graphite-clad, fuel elements of uranium and thorium carbide. Helium gas from two Clark centrifugal circulators will enter the reactor vessel at 600 F and 300 psia. In the fuel core, its temperature will be raised to 1380 F. The helium will then leave the reactor, flow downward through two steam generators in parallel, and return to the two centrifugal circulators, thus completing the cycle. Steam at 1100 F and 1500 psi drives a conventional 40 mw steam turbo generator. Over-all plant efficiency is calculated at approximately 35%.

this concept is applied."

The thermal conditions of the Peach Bottom HTGR prototype plant include fuel surface temperatures up to 2000 F, a helium coolant outlet temperature of 1380 F and steam conditions of 1000 F and 1450 psi, to take fullest advantage of modern high-efficiency turbine-generator equipment.

Mr. Fortescue spoke before a congress symposium devoted to power reactor concepts employing uranium-thorium fuel mixtures. In such systems, as exemplified by the HTGR concept, the use of fissionable uranium-235 and fertile thorium-232 creates a new fuel in the form of fissionable uranium - 233 while the reactor is operating. This transformation of non - fissionable thorium into a fissionable form of uranium contributes to improved economy, in terms of higher fuel burnups per loading and therefore longer fuel lifetime.

The HTGR concept employs uranium - 235 and thorium dicarbides dispersed in cylindrical graphite fuel compacts. The fuel compacts are contained in series in graphite sleeves, allowing unusually high fuel burnups and high temperature operation without deterioration of the fuel structure. In addition, the use of graphite as the structural material for the fuel element eliminates the wasteful neutron absorption associated with metallic cladding material.

Fuel burnups ranging upwards from 70,000 megawatt days per ton of uranium fuel plus thorium are indicated for HTGR-type plants, corresponding to lifetimes of three years for the prototype plant's fuel elements to as long as five to seven years for large-size plants.

SHORTAGE OF ENGINEERS

In no time at all, industry is going to be hobbled by another severe shortage of engineers, claims Dun's Review and Modern Industry. And industry is doing little to cut the inevitable effects. Few businessmen, in fact, are even aware of the fast-approaching crisis. The number of freshmen entering engineering colleges has dropped sharply in the past three years.

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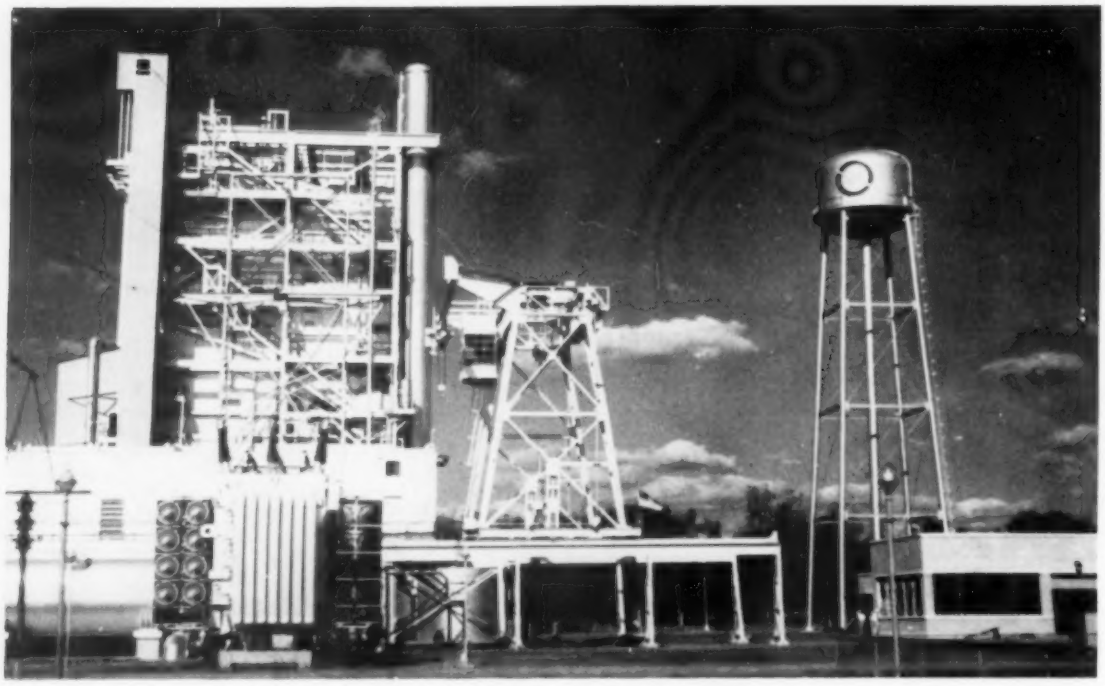


Natchez Station of Mississippi Power & Light Company.

Mississippi Engineers Avoid Costly Generator Shut-Down

Cleaning Condenser in Service

By JORGE E. BURGUET

Production Engineer
Mississippi Power & Light Company

AT OUR NATCHEZ Steam Electric Station we had been experiencing a gradual increase in terminal difference in our condenser. Back pressure was consequently high to such degree that something had to be done.

Shutting down the unit for the required outage period to chemically clean the condenser by a commercial chemical cleaning concern was out of the question. Our transmission system (interconnected with sister companies in neighboring states) could not allow this particular unit any outage at that time. Also, we have experienced leakage through our condenser butterfly valves and these would require extra time to seal before any acid cleaning could be done.

At various professional meetings that our production engineers had attended a method of cleaning while in service had been discussed. Another utility company in a nearby state had successfully cleaned condensers by lowering the pH of the water by the use of sulfuric acid to slowly dissolve the scale with the condenser remaining in service.

All indications from our heat balances and condenser tests were that scaling was occurring in our condenser. It should be pointed out that the raw water at this particular plant contains total hardness due to calcium and magnesium in the range of 300 ppm, and even after softening by a lime and alum coagulator, the hardness is reduced to only 70 to 80 ppm. When recirculated and concentrated to 2 to 6 times, total hardness salts in the circulating water can vary from 140 to 350 ppm. Concentration, of course, is controlled commensurate with a proper scaling index within the limitations of certain procedures inherent of the cooling water cycle, as well as chemical feeding of specific water treating compounds.

Information was gathered and compiled: chemical analysis of the raw water, softened water and circulating water was thoroughly conducted. A simulated circulating water with low pH was tested for harmful products as well as effects deleterious to our purpose.

All equipment involved was checked to make sure it would be in top shape to start and continue the acid treatment: sulfuric acid pumps, water treatment plant at

maximum hardness reduction and operating level, necessary laboratory tools and field testing facilities were provided, batch tanks for inhibitor and phosphate were installed and a time to begin our cleaning was set.

A procedure was established and personnel were familiarized with duties. The following schedule of events summarizes our condenser cleaning — all references pertain to the circulating water:

First Day

10:00 AM—pH 6.0 to 7.0. Concentration 2½. Blowdown open to maintain minimum concentration (desirable was 1½ times, but not able to maintain).

10:15 AM—60 lb sodium hexametaphosphate added. Chlorinator out of service to make up water. 65 lb of copper inhibitor added. Acid feed increased to obtain a pH of 3.0 to 3.5.

12:00 Noon—600 lb sodium hexametaphosphate, 33 lb copper inhibitor added to circulating water.

6:00 PM—225 lb sodium hexametaphosphate, 33 lb copper inhibitor added.

12:00 M.N.—Same as above.

Second Day

6:00 AM—Same as above.

12:00 Noon—Same as above.

6:00 PM—Same as above.

12:00 M.N.—Same as above.

Third Day

6:00 AM—Same as above.

9:00 AM—Phosphate and inhibitor feed stopped — acid feed decreased to keep pH of 6.0 until PO_4 content was 10 ppm or less.

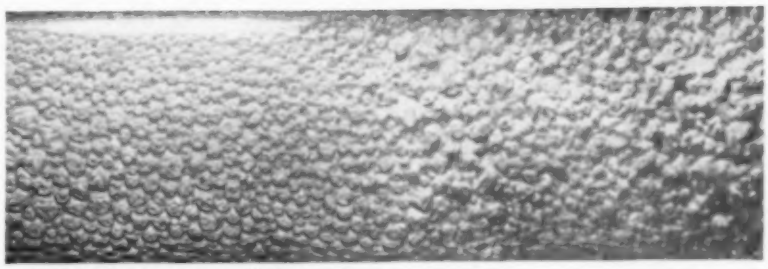
After phosphate residual dropped to 10 ppm, pH was increased to normal 7.0 to 7.2 where it is automatically controlled.

The copper inhibitor was added in a slurry at the circulating water pump suction. Sodium hexametaphosphate was added by placing crystals in a large screen so constructed that the accelerated make-up water was the solvent.

Test Results

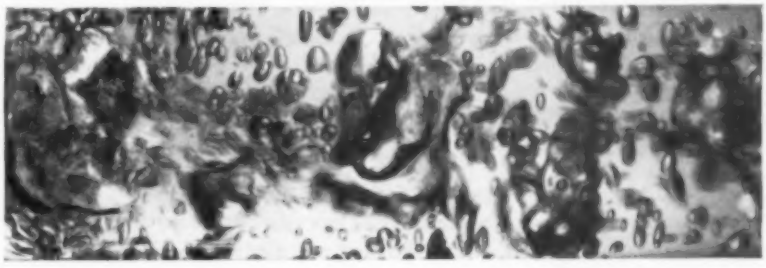
Results of condenser test were: Prior to treatment—Terminal dif-

CARRYOVER



Foam build-up in untreated boiler water

No foam in boiler water treated with Concentrol



MUST BE STOPPED!

Carryover of solids due to foaming is in most cases continuous. Suspended matter helps the foam layer build up so that steam bubbles, with their entrained boiler water, do not break quickly at the steam-water interface. Thus, boiler water is carried over into the steam mains.

Many plants with wet steam problems have determined that carryover must be stopped and have turned to the Bird-Archer Company for an economical solution. Bird-Archer research in stabilizing boiler water with high foam potential is backed by 60 years experience. The result is the development of a highly effective antifoam agent called CONCENTROL. Even when used in relatively small dosages Concentrol is effective in combining both resistance to hydrolysis or breakdown under boiler temperatures and pressures with ability to control foam.

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ference was 20.6 F. After treatment (3rd day)—Terminal difference was 13.6 F.

Cost of Treatment

Sodium Hexametaphosphate (freight included)	358.00
Copper inhibitor (freight included)	175.00
Sulfuric acid (accelerated feed only)	66.00
	599.00
Extra labor (overtime only)	25.00
Total cost of project	624.00
Bid by commercial cleaning concern	2,016.00
Approximte amount saved	1,392.00

Conclusions

We think this was the answer to our problem for that specific plant and time. We know from our tests that an improvement was accomplished. Nevertheless, we do not consider this a 100% substitute for a properly cleaned condenser where one can, with sufficient time, open the condenser for inspection, and be sure that valves shut without leakage, and a controlled acid wash is fed and recirculated.

In our case, however, we had the added dividends that our load was not restricted or reduced, and there was a genuine advantage in avoiding an outage.

PVC Used for Sulphuric Acid

FALCON CHEMICAL Corporation of Lake Charles, La., is using PVC (polyvinyl chloride) pipe for a sulphuric acid mixing header where 98 per cent sulphuric acid is mixed with water to produce 5 per cent sulphuric acid in solution.

Shortly after the firm's plant went into operation, the original 316 stainless steel in this application presented a considerable maintenance problem. After a month of operation, the stainless mixing header had been patched heavily — with some sections having four patches, one over another.

Operating pressure and temperature, estimated at 60 pounds and 100 degrees Fahrenheit maximum, fell within range limits of PVC. As an added safety factor — for protection of personnel working under the mixing header — schedule 80 PVC pipe was used.

Byers PVC pipe and all neccessary fittings were furnished through Murray-Brooks Supply Company, Lake Charles.

Connections were made with PVC flanges to existing ferrous flanges. Acetone was used to clean fitting sockets and pipe ends prior to solvent cementing. Only tools used during installation were a hack saw to cut pipe and a file to smooth saw tooth marks.

The installation was placed in service on October 1, 1959, and has been operating intermittently since. Recent inspection indicated the PVC still in original condition. At no time, since original hydrostatic testing, has leaking been experienced.

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Longer Service from Air Filters

WHAT PRICE COMFORT? The comfort and efficiency of employees in the Martin-Orlando facility is a prime consideration of the Utilities Operations Personnel in the Maintenance Section. Conditioning equipment must be maintained with wisely spent dollars.

Continuous study and analysis of the performance of filter units in our air conditioning system resulted in the purchase of spun polystyrene filters at a reduction in unit cost per filter and with very gratifying operating results. The quality of the air and cfm remained the same, while ease of handling and storage convenience was greatly enhanced. Even with this reduction in cost and the frequency of replacement remaining the same, filter costs still seemed too high.

Further study of this problem led to an experiment consisting of dry-cleaning and reuse of these filters. The immediate results were definite and conclusive:

1. Quality of air was improved.
2. No measurable reduction in cfm could be detected.
3. Filter units could be dry-cleaned and reused as many as ten to twelve times (dependent on care in handling).
4. Replacement costs were reduced 91.25%.

Actual replacements with new filters over a period of one year amounted to 8.75% of the previous annual total replacement cost. Dry-cleaning cost amounted to 15% of the previous annual total replacement cost.

The Martin-Orlando facility, in adopting this dry-cleaning method for the maintenance of air conditioning filter units, has reduced its replacement costs from $10,000 per year to $2,375 per year for an annual savings of $7,625 which we feel is an excellent example of *Value Analysis* and *Spend Wisely* programs.

By KENNETH O. EBY, Supervisor of Utilities and Plant Operations, The Martin Company, Orlando, Florida.

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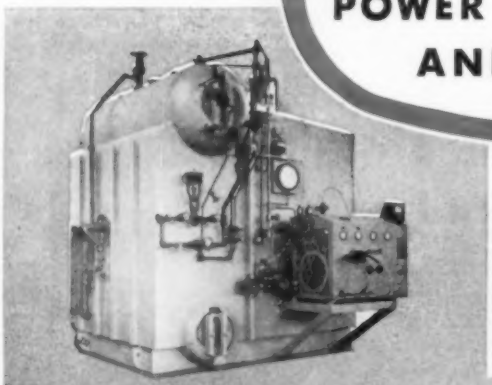

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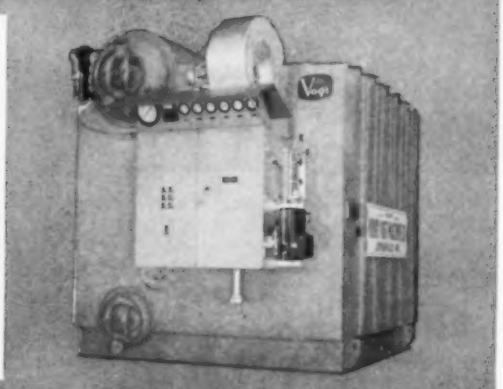

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EDITORIAL CONTENT

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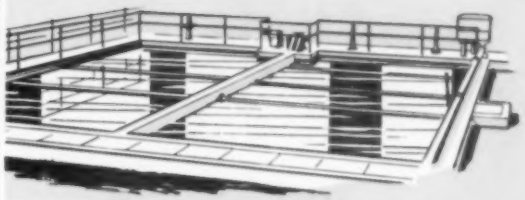

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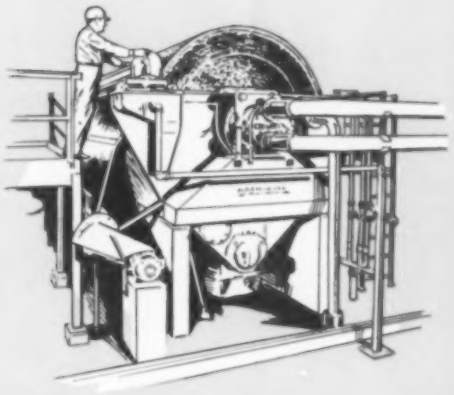

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Centrifugal Pump Clinic

QUESTIONS and ANSWERS
Conducted for SPI Readers

By **IGOR J. KARASSIK**
Consulting Engineer and
Manager of Planning
Harrison Division
Worthington Corporation

Why Two Pumps with Single Drive?

QUESTION . . . . . .

OVER THE YEARS I have seen a number of pumping units made up of two single stage pumps piped up to operate in series and driven by a single electric motor or steam turbine. What is the reason for such an arrangement rather than the use of a two-stage pump in a single casing? Wouldn't a series unit be more expensive than a single two-stage pump? And if two pumps are used in series is it better to place the motor in the middle to drive one pump at each end, or to put the motor at one end and drive both pumps on the same side of the motor? (N.E.M.)

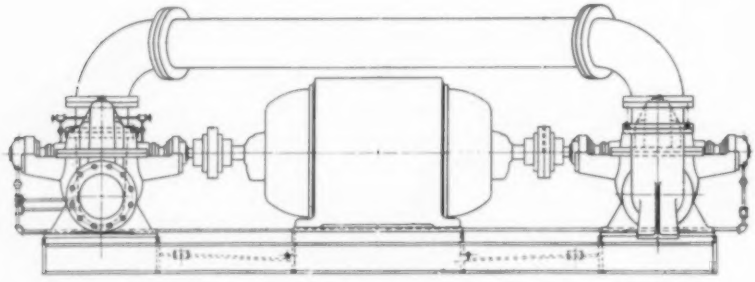

Fig. 1—Motor with double extended shaft between two pumps

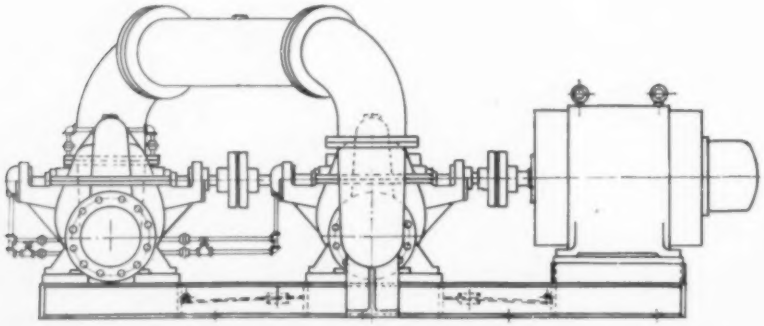

Fig. 2—Two pumps driven from same side of motor

ANSWER . . . . . .

GENERALLY, a pump manufacturer will have a line of single stage, double suction pumps ranging from possibly 4" discharge all the way to 36" and sometimes even 54". On the other hand, the frequency of application of two-stage pumps is somewhat restricted and it is seldom that a standard line of pumps much larger than 8" or possibly 12" in two- or three-stage construction is designed by any pump manufacturer. The use of single stage pumps operated in series stems from this limitation.

Whenever an application is encountered for a relatively large capacity and a total head in excess of what can be reasonably developed by a single stage pump and no two-stage pump is available to meet these conditions, it will always be more economical to use two single stage pumps in series rather than develop a special pattern for a two-stage pump which may never again find another application.

Of course, in such a case, it is also more economical to use a single driver than to provide each individual pump of the series unit with its own driver. The only exception to this occurs in cases where the total head is made up mostly of frictional losses and when a variable output may be re-

quired. Since a single pump may be used on occasion in such an installation and the second pump is only needed at the maximum flows, there is logic in providing individual drivers to permit shutting down one of the two pumps operating in series. This is quite typical, for instance, of pipe line installations.

Occasionally, a series unit made up of two single stage pumps may even be preferred to a two-stage pump even when it is available for the capacity and total head requirements. This will be the case when the power consumption of the unit is evaluated and a very high premium is placed on each point of efficiency. It is quite possible that this premium will more than offset the probable higher initial cost of the series unit over the two-stage pump.

As you state, sometimes the motor is built with a double-extended shaft and is placed between the two pumps, as in Fig. 1, and sometimes a standard motor is used, with both pumps driven from the same side of the motor (Fig 2).

In the latter case, the pump in the middle has to be provided with a double-extended shaft. This shaft must be capable of transmitting the total horsepower required by the two pumps. This may or may not be practical, even if the shaft diameter and the bearing sizes in the pump nearest to the driver have been increased. Thus, the choice between the two arrangements is sometimes dictated by pump design limitations.

It will be found, generally, that it is less expensive to purchase a double-extended shaft motor than to design a special shaft and bearings for a standard pump. On the other hand, if the driver is a steam turbine, the only possible arrangement is to place both pumps on the same side of the driver, as steam turbine shafts cannot be provided with a double extension.

EDITOR'S NOTE:

Write the editors to suggest elements of pump operation and application that you would like the author to discuss in coming installments.

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MANAGEMENT CLINIC

Conducted by ROBERT H. EMERICK, North Charleston, S. C.

What Does Leave of Absence Imply?

Question . . . . . .

WHEN AN EMPLOYEE member of a Bargaining Unit suffers a period of extended illness, to what extent is the company obligated to give him back his old job when he returns to work?

In our case, a mechanic asked for, and was granted, a three months leave of absence. During his absence we had to fill his position. Consequently when he returned to duty, there was no place for him except in another department, and under another title.

The new position does not pay quite as well as the one he left, but we feel that in making a job for him, we have done all that we could.

There is a possibility he will initiate a grievance, although nothing in the contract requires the company to restore a man to his original job following extended sick leave.

Suggestions . . . . . .

WHEN THE CONTRACT grants extended periods of sick leave, but does not define the position a man is to be given on his return, the inference is he will re-occupy the same job he held at the time of his illness. This is common industrial practice, based on the premise that an employee absent from work on account of illness has not abandoned the job, and may be expected to return to it.

A policy of making permanent replacements for every employee off for more than three or four days by reason of illness, and then offering the recovered employee whatever work happens to be available, would, in effect, put each employee on the basis of day to day employment and completely destroy plant morale.

In this case, Management has two choices of action. First restore the employee to his original job and title. Second, provide him with other work that offers equal opportunity for earnings, and carries with it a title at least abreast of the one he is asked to give up.

The first choice is the proper one wherever possible. The second, though generally less satisfactory to the employee, is allowed by most Union contracts which acknowledge Management's right to make transfers within the Company for proper cause, *providing* the transferred employee does not lose either earnings or seniority thereby. In the case described, the transferred employee appears to have suffered on both counts, and should the Union file a grievance and present it eventually to arbitration, the Company is almost certain to lose and be required to make up the lost earnings.

It's our belief that the legal term of "estoppel," which gives one party to a contract the right to assume that what has been common practice in the past will hold in the present, cannot be set aside except by express wording in the Contract. Such express wording, as a job level promise, is not reported in this contract.

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How Cars Are Thawed at Baltimore

DESPITE one of the worst winters on record, the Baltimore Gas and Electric Company completed winter stockpiling operations at its new Charles P. Crane Station on schedule. Stockpiling of some 90,000 tons of coal continued without interruption through the coldest weather of the season.

The Charles P. Crane Station is scheduled for commercial operation in the summer of 1961. The first unit, one of four planned for this site, will consume some 65 tons of coal per hour under full-load operation.

A one-man thawing station, possibly the most automated of its type, enables the company to thaw up to 10 cars an hour. The 225-foot-long thawing facility handles five cars at a time.

Thirty-six prefabricated thawing pits are so arranged that any size car, or any combination of sizes in a five-car train, can be thawed effectively without damaging the cars. Each pit radiates heat at the rate of 1.5 million Btu per hour. The arrangement of the pits makes available to each car as much as 6 million Btu per hour.

This thawing station was designed and engineered cooperatively by Hauck Manufacturing Company, and the Baltimore Gas and Electric Company to meet the specific requirements of the Charles P. Crane Station.

The trackside windbreak at the thawing station is seen in the photograph at left. The control panels and thawing pits, on the other side of the windbreak, are shown in the view at right. The blower adjacent to the windbreak (left) is a low-pressure air blower to provide air needed for oil atomization and combustion. The Hauck thawing equipment is oil-fired since gas is not available at the site.

Fence with a Future

THE INTAKE structure at S. C. Electric & Gas Company's Plant Hagood, Charleston, S. C., is located on the bank of the Ashley River. Suitable fencing material to enclose the structure was a problem since the salt air and spray are always working against these materials. Standard galvanized fence materials enjoyed only a brief life under exposure to these elements.

The solution to our problem was a simple one since there was some copper-coated guy wire available which was practically on its way to the junk yard. It seemed that this was just what we needed for our fence.

The fence which is shown in the photo was built by the plant's maintenance force, and the scrap wire which was salvaged is holding up very nicely. To date it has withstood many nights of salt-filled moist air and a constant salt mist which comes from the screening system.

By A. J. DeSTEFANO, JR., Plant Hagood, South Carolina Electric and Gas Co., Charleston, S. C.

Sealant "Can Take It"

A LARGE TEXAS chemical company requires a tight packing seal on the shafts of seven two-speed mixers in its light hydrocarbon section. Cuprous ammonium acetate and butadiene are combined in these mixers which operate at 68 or 100 rpm. Environmental combinations of chemicals and temperatures from 10 F to 200 F are pretty severe. It could quickly ruin the effectiveness of many types of sealing compounds.

However, this problem was eliminated by using a nonreactive sealing compound — a silicone, Dow Corning Valve Seal. Applied only once a month to the asbestos packing in the drive shaft glands, this silicone sealing material has kept the lines free of contamination. Manufacturers claim the compound withstands temperatures from —40 to 500 F, and resists moisture, oxidation, oils, and most chemicals.

DO YOU KNOW WHAT METALLIZING CAN DO FOR YOU TODAY?

With today's improved metallizing materials and methods:

Plant executives find new ways to slash maintenance costs, reduce downtime, cut machine parts inventory...

These real-life examples show how plants save money with metallizing:

Necks of winding rolls in a textile mill were formerly repaired by a slow machining method, requiring highly skilled labor. Now the worn necks are built up with flame sprayed metal, quickly machined to size. Savings run $20,000 a year.

Valve plugs and seats, working in sand, oil and salt water, lasted only a few hours in service. Hard-faced by welding, a set cost $155, lasted from 3 to 8 hours. When flame sprayed with tungsten carbide powder, service life was increased to a minimum of *2 weeks,* 4100% longer! Cost of metallized set, $73. But reduced downtime far outweighs the dollar savings.

A Connecticut company was sending its worn shafts out for repair by welding at a cost of $50 each. Then they found a local shop that specialized in metallizing was able to do a better job for $27.50. The same job shop salvaged a big degreasing tank, value $2,850, by flame spraying with zinc for $683. The shop made money, the customer saved money.

A shipbuilding company installed metallizing equipment to repair such parts as pump rods, pistons, crank shafts for diesel engines, stern bushings, valve stems. A badly worn tugboat shaft, replacement cost $3,000, was repaired and made better than new for $400. That job alone more than paid for the METCO equipment.

From these cases you can see how modern metallizing pays, whether in plant maintenance departments or in job shops serving the many companies that don't need their own installation. Wherever there's wear, in rotary or sliding action, there's an opportunity to save money and make money.

New and improved materials

Among these new materials are a number of nickel, chrome, boron hard facing powders. Sprayed tungsten carbides are also widely used. Many others are available to give new values to the basic benefits of metallizing, which may be summarized as: less downtime; far less machining or grinding time, reduced parts inventory; and "better than new" performance of the metallized parts.

With savings like these there are big opportunities for more efficient maintenance operations, either with METCO installations or through local job shops.

To explore these advantages and see how they apply to your operation, check the coupon below and send it off today.

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Stud-Welding at Bowaters

TEN THOUSAND headed concrete anchors were stud-welded recently in a single work-week by one man during fabrication of U-shaped steel liners for a log flume at the Bowaters Carolina Corporation, Catawba, South Carolina. It is estimated that this rate of application with a Nelson NS-10 stud-welding gun was about three times faster than any alternate type of concrete anchor could have been installed.

Fabrication of the flume lining, which was 1,000 feet long when completed, was performed by the Kline Iron and Steel Company of Columbia, South Carolina.

"A major advantage provided by end-welded studs, in addition to their speed in application, was the elimination of distortion in the 5/16 inch thick steel liner plate," Kline officials reported. If hand welded anchors had been used, straightening of liners would have been required.

A total of 105 headed concrete anchor studs (⅝ inch in diameter and 5⅛ inches long) was welded to each 20 foot long flume section with two 400 ampere motor generators in parallel serving as the power source.

The plates were formed into half U's and the rounded ends were then bolted together and hand welded to steel ribs embedded in the concrete trench.

Liner sections were designed and studs specified by the Bowaters Engineering and Development Corp., Calhoun, Tennessee. General contractor was the Daniel Construction Co., Greenville, South Carolina. Studs were supplied by Nelson Stud Welding, a Division of Gregory Industries, Inc.

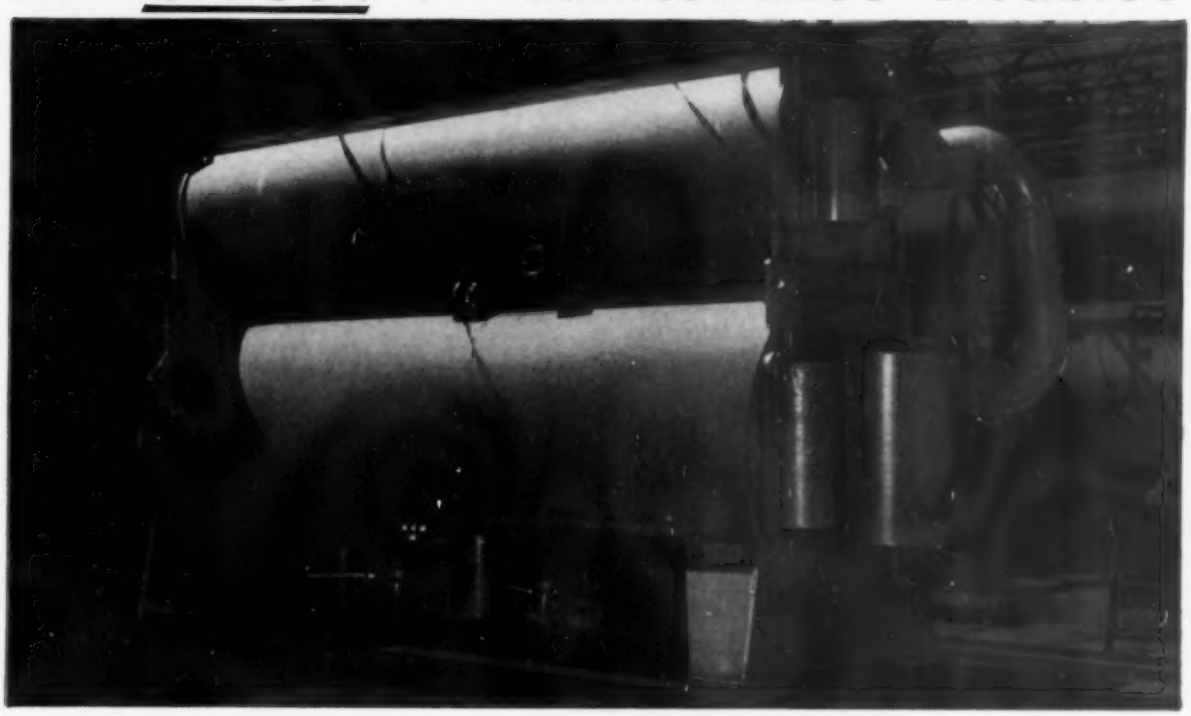
Ten thousand Nelson studs were used to anchor this 1,000-foot-long log flume liner, made of 5/16-inch steel plate, to the surrounding trench of reinforced concrete. The liner was fabricated in 20-foot-long half-U sections which were then welded in place. The studs may be seen among the reinforcing bars.

. . . . . COMING IN OCTOBER . . . . . .

The 1961 BETTER PRODUCTION ISSUE of S.P.I. will present specific information showing how Southern and Southwestern industrial operations and power plants are getting better performance because of improvements they have made in plant services.

CASE STUDIES will show exactly how production has been improved in specific plants. While emphasis will be placed on increased production, related improvements (such as equipment modernization, better maintenance, fewer rejects, reduced operating costs, etc.), will be included as part of the overall Better Production theme. The object of the entire issue will be to present a large number of proven procedures and improvements that may be copied and put to work toward increasing output and improving performance of Southern and Southwestern plants and factories.

Even boiler-cooled air conditioner faces the *Oldest* of maintenance troubles



Lithium bromide absorption systems need protection of their condenser cooling circuits

A popular development in air conditioners is the boiler-fed, water-cooled lithium bromide absorption system. It is economical and efficient, but since water plays a major part in its operation its maintenance problems are the same old ones—metal rusting, pitting, scaling and reducing efficiency to a point of complete breakdown.

Two ANCO products—Coolex and SR-2—can help you get and maintain top performance from your air conditioning system by neutralizing the effects of scale-forming and corrosive elements. Coolex and SR-2 keep rust and scale from forming and acting as insulators, from reducing heat transfer to an ineffective minimum. With the proper treatment program using these products the capacity of your system is maintained, operating costs are held to a minimum.

There are competent ANCO service representatives throughout the South who are experienced in all phases of water treatment and who will be glad to come by your office and give you the full story. Call or write to one of the offices listed below and we'll see that you get prompt attention. A simple maintenance program now may save you hundreds of dollars later, and there is no obligation on your part for talking with one of our men.

Write today and request an Anderson service engineer to make an analysis and recommendation on your plant's water treatment. There is no cost for this service.

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News of the South-Southwest

Continued from Page 17

Allis-Chalmers—W. Va.

The Ensign Electric & Mfg. Co., 914 Adams Ave., Huntington, West Virginia, has been appointed a distributor for **Allis-Chalmers** motors in an area covered by the firm's Charleston district.

Established in 1938, Ensign Electric & Mfg. Co. is headed by D. A. Ensign. H. L. Eaton is sales manager.

Airco—Charlotte

G. C. Wingate has been appointed assistant manager-sales of **Air Reduction Sales Company's** Charlotte District, it was announced by H. C Wallace, regional sales manager, Southern region. He replaces John T. Winn, III.

As assistant manager, Mr. Wingate will supervise the activities of all

Airco salesmen and distributor merchandising representatives in North Carolina, South Carolina, Virginia, eastern Tennessee, northeast Georgia, and the Bluefield area of West Virginia.

Mr. Wingate has been with Airco since 1936. His address is 304 South Laurel Avenue, Charlotte, North Carolina.

Phelps Dodge—Florida

Clyde F. Reed has been promoted to branch manager of the Florida district of the **Phelps Dodge Copper Products Corporation.** Mr. Reed will move his headquarters to the company's Florida Mill Depot in Tampa. He formerly worked out of the Phelps Dodge Jacksonville office.

Sturtevant Representatives

Forney Fuller & Associates, 1900 Veterans Highway, New Orleans, La., have been appointed sales representatives for the **Westinghouse Electric Corporation, Sturtevant Division** in Louisiana, Mississippi, Texas, southern Arkansas, and western Tennessee. They will handle the complete line of Sturtevant heavy-duty and mechanical-draft fans.

Mr. Forney Fuller has been active in the power industry specializing in the sale, design, and maintenance of steam generators, fuel-burning equipment, and boiler auxiliaries. He was graduated from Auburn Uni-

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versity in 1943 and has had wide contact with Gulf Coast industries.

Associated with Mr. Fuller is Mr. Gert V. Eiserman, who has been serving the power and process industry in engineering and sales for the past 12 years.

Midwest Piping Appoints E. B. Stolle—St. Louis

Crane Co. has announced the appointment of E. Byron Stolle as general manager of its **Midwest Piping Division,** St. Louis, Mo. He succeeds O. P. Carter, who has been assigned special duties with the parent company.

Mr. Stolle joined Midwest Piping as a draftsman in 1937 and worked in various engineering capacities until 1958 when he became vice-president and manager of Midwest's Pacific Division.

Mr. Stolle was graduated from the Missouri School of Mines and Metallurgy and received his degree in Mechanical Engineering in 1934.

Cleaver-Brooks Affiliate Changes Name

Changing the name of Cleaver-Brooks Special Products to **Aqua-Chem, Inc.,** effective immediately, has been announced.

Aqua-Chem, an affiliate of Cleaver-Brooks Company, Milwaukee, is one of the leading manufacturers of sea water and brackish water conversion and purifying equipment.

The company describes its operation as "the separation of fluids through thermodynamics and electrodialysis." This equipment has uses in the marine, municipal, military, off-shore drilling and pharmaceutical fields and for the recovery of chemicals from industrial wastes.

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Serving the South from three strategic locations allows us to meet customer needs faster in today's low inventory economy. Our fleet of trucks is constantly on the move, night and day, making deliveries when customers want them.

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Southern News Briefs (Continued)

Crane's Midwest Piping Div. Holds St. Louis Meeting

The 1961 sales meeting of **Midwest Piping**, a division of Crane Co., was held on May 15 and 16 at the Statler Hilton Hotel, St. Louis. Crane Co. purchased the St. Louis piping firm in April of this year, and purpose of the meeting was to redefine the relationship and sales objectives of the parent company and its new division.

About 50 persons attended the two-day session. They included three Midwest district managers and their sales personnel; representatives of the Midwest St. Louis office; and several company executives, including D. C. Fabiani, Crane's executive vice-president; Norman Champ, vice-president, and O. P. Carter, general manager of the Midwest operation. Also attending were representatives of three other Crane divisions: David M. McIntosh, vice-president in charge of sales, Chapman Valve Manufacturing Division; George M. Rossiter, assistant sales manager for Swartwout Division; and Erwin Bookout, general sales manager, Cochrane Division.

Mr. Fabiani opened the sessions, which were presided over by Phil M. Becker, Midwest's Director of Manufacturing Sales.

Carling Proceeding with Ft. Worth Brewery Plans

A bill recently passed by the Texas Legislature making minor changes in Texas alcoholic beverage regulations makes it possible for the **Carling Brewing Company** to proceed with plans for construction of a multi-million dollar brewing plant at Fort Worth. One change allows a brewing company three years rather than one to construct and start operation of a plant after it has applied for a permit.

Carling announced that design and engineering work will take about one year for completion before construction can be started.

The Fort Worth plant will be Carling's eighth. The company's seventh plant was opened at Baltimore in May. Carling also has a plant in Atlanta.

Wright Hoist Div.—Atlanta

Thomas R. Merritt has been appointed district sales manager of the Southern Sales District of **Wright Hoist Division, American Chain & Cable Company, Inc.**, with headquarters at 1055 West Marietta Street, N.W., Atlanta, Ga., succeeding J. W. Allen who has resigned. Mr. Merritt has served as a sales representative for Wright Hoist Division in the Southern Sales District since 1958.

Parker-Hannifin Starts Alabama Plant Operation

Parker-Hannifin Corporation, Cleveland, Ohio has leased a plant in Huntsville, Alabama primarily as a service center for its growing line of fluid system components for space vehicles. Huntsville is the site of the George C. Marshall Space Flight Center of the National Aeronautics and Space Administration.

The Huntsville operation is a department of the Parker Aircraft Division of Los Angeles. The new plant is managed by Ned Shiflett, formerly production manager of Parker-Hannifin's Cleveland Accessories Division.

S&C Electric—Dallas

John A. Schwenke has been named sales engineer for the northern half of Texas for **S&C Electric Company.**

His headquarters are in the Fidelity Union Life Building, Dallas 21, Texas.

Mr. Schwenke has been associated with the sales and the engineering of high-voltage power equipment gear for the past fourteen years. He is a member of the American Institute of Electrical Engineers.

Fisher-Pierce—Texas

The Fisher-Pierce Division of Sigma Instruments, Inc. has appointed Tate and Company as sales representative to handle the complete Fisher-Pierce line of controls.

Tate and Company will cover all of Texas from three offices: 3911 Oak Lawn Avenue, Dallas; 3705 Bellaire Drive, South, Fort Worth; and 8711 McAvoy Drive, Houston.

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In recent years the cost of new chimney construction and maintenance has skyrocketed due to greater use of more economical low cost coal, heavy fuel oil, refinery sludge and sour gases which form stronger acids resulting from the use of these high sulfur fuels. The lowering of the gas temperatures through the use of economizers has increased the problem. Heretofore no coating has succeeded in resisting these highly corrosive acid gases.

Now, after two years of intensive research and testing, Benjamin Foster Company releases STACKFAS—the world's first exclusive corrosion resistant material proved effective against high sulfur chimney gases.

Foster STACKFAS has been field tested and proved by twenty-four major public utilities, chemical and industrial plants. Its development program had the cooperation of the nation's most renowned consulting engineers, insulation manufacturers and chimney constructors.

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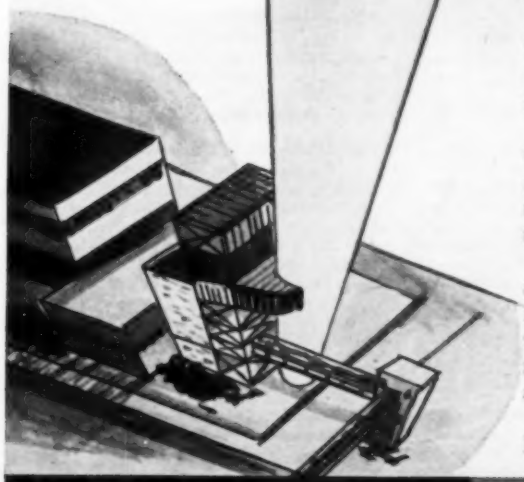
For complete details, specifications and applications of Foster STACKFAS, write for Bulletin No. SF-61.



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NEW Catalogs & Bulletins

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MAINTENANCE—TOOLS EQUIPMENT & METHODS

1—EMERGENCY CHEMICAL CLEANING — 4 page catalog highlights Anco solvents and service trucks available to remove scale, rust and other deposits from all types of heat exchange equipment. — ANDERSON CHEMICAL COMPANY.

2—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control and distribution systems, at a cost less than 1% of value of equipment.—Atlanta office of WESTINGHOUSE ELECTRIC CORP.

4—Simplified Lubrication—You may be using up to five times as many lubricants as you need; up to five times as many ordering, billing, handling, stocking problems. Booklets on Multipurpose lubricants show how you can cut maintenance costs and inventories.—GULF OIL CORPORATION.

6—Tool Truck—Save time with this compact truck carrying full tool selection to emergency repair jobs. Four drawer unit described in bulletin 8141-A, Semi-pneumatic 10" balloon tires ease heavy loads over rough pavements. — SNAP-ON TOOLS CORPORATION.

50—INDUSTRIAL WEED PROBLEMS? — Any man can weedproof 10,000 sq ft in ten minutes with Urebor — the dry granular weedkiller. You only use 1 to 2 lb per 100 sq ft. Folders give details on long-lasting control and your nearest distributor. — UNITED STATES BORAX & CHEMICAL CORP.

53—Steam Line Treatment—Folder describes alkaline IPCO S-L-T. Used in boiler water, it will volatilize and travel with steam to return lines. Prevents costly repairs and provides insurance against replacing pipe and fittings. — IPCO, INC.

54—Repair & Maintenance Products —Complete product line shown in use with prices, sizes, weights, colors and styles. All products distributed by Rasco's 11 Southeastern Branches. — REYNOLDS ALUMINUM SUPPLY CO.

55—BETTER TUBE MAINTENANCE—Catalogs describe how line of air-powered tools and accessories (condenser cleaners, tube cutters, expanding brush head cleaners, etc.), are job-fitted to specific tube repair operations. — AIRETOOL MANUFACTURING COMPANY.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

109—PROCESS PUMPING—Factors of best economic balance in process pumping offered by new pipe-mounted centrifugal pumps highlighted in Type SPM Bulletin 142.—PACIFIC PUMPS.

122—Industrial Fans — Bulletin 702 covers Type XL fans for air and material handling. Volumes to 130,000 cfm pressures to 18" SP. Catalog 855 describes Pressure Fans. Volumes to 12,000 cfm, 10" to 50" SP — CLARAGE FAN CO.

123—Slurry Pump — Catalog describes the new SP-90 slurry pump which permits proportion of slurries in the mix tank to remain constant, with pumping rates variable from maximum to 1/5 of maximum.—MANZEL

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See pages 69 & 70

135—Air Cooled Heat Exchanger—Bulletin 132 describes air-cooled unit to solve the problem of water supply and disposal, cooling fluids or condensing vapors, removing heat at rate of input for close control of temperature. All parts of unit always accessible for easy maintenance with cleanable coils. Replaces both cooling tower and surface condenser. — NIAGARA BLOWER COMPANY.

163—Storage Water Heaters — Gas-fired, Scalefree 230 units described in Bulletin 4. Fully Automatic package requires only simple connections. Available in more than 100 storage and recovery combinations ranging from 250-4000 gal. — THE PATTERSON-KELLEY CO.

170—PUMPING PROBLEMS?—Two stage, Type JC pump will meet requirements up to 650 gpm. Horizontally split casing top can be taken off quickly for inspection and rotating parts removed and replaced without disturbing piping, connections, fittings or driver.—THE WEINMAN PUMP MFG. CO.

INSTRUMENTS—METERS CONTROLS—REGULATORS

205—Draft Gages — Bulletins describe inclined, vertical tube, air filter gages, straight line and dial pointer type, minified draft and receiver type gages, velocity gages and pitot tubes, gas analyzers and steam calorimeters. — ELLISON DRAFT GAGE CO., INC.

207—Control Centers & Systems—Combustion safeguard and automation packaged control centers insure full coordination of complete system, place responsibility on one source, insure correct wiring, and reduce field labor. Catalog C11 illustrates variety of designs and circuits now in use.—WEBSTER ENGINEERING CO.

212—Self-Powered Controls—Bulletin 620 describes self-powered automatic temperature regulators — no compressed air or electrical wiring required, no delicate mechanisms to adjust, no packing glands to stick, no shut-down due to power failure.—SARCO COMPANY, INC.

222—Pressure Regulators — Catalog No. 77 illustrates and describes application, operation and specifications for a complete line of reducing, back-pressure and pump-pressure regulators.—MASON-NEILAN.

233—Control Drives — Product Specification P81-1 — Provides description, illustrations, ordering information, torque ranges, and dimensions of Bailey control drives for the positioning of regulating devices such as dampers, butterfly valves, rheostats. Actuated by pneumatic signals from automatic or remote manual control. — BAILEY METER COMPANY.

234—Soot Blowing Control Systems —Bulletin 1029, 16 pages, gives complete engineering description and illustrations of Selective-Sequence and Automatic-Sequential insert type panel controllers. List of typical installations shows wide variety of applications. — COPES-VULCAN DIVISION.

238—Auxiliary Alarm on Remote Gages—Bulletin C6 — Eye-Hye Remote Reading Gage with electrode and relay adaptation actuates auxiliary audible or visible sginals at high or low water levels.—RELIANCE GAUGE COLUMN CO.

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Bulletins (Cont.)

255—Temperature Regulators—"Sliding Gate" units are simple, low cost, self-operating, automatic control valves for heating or cooling applications. Action easily reversed by rotating seats 180°; self-powered — no electricity or compressed air needed; easy to install. Bulletin J-180-1 describes ten standard ranges from 35-450 F.—OPW-JORDAN.

267—Remote Liquid Level Indicators—Bulletin RI-1825 describes indicators for pressures up to 3000 psi — advantages, operation and specific installations.—YARNALL-WARING COMPANY.

PLANT CONSTRUCTION—WELDING EQUIPMENT—SPECIALTIES

300—BUYER'S GUIDE—Up-to-date industrial and maintenance building products stock list. Includes complete listing of all Rasco distributed products plus branch locations. — REYNOLDS ALUMINUM SUPPLY CO.

301—Vacuum Cleaning Systems — How portable and stationary systems cut costs and increase plant efficiency shown in Booklets P8 and AB-100. Eight heavy duty units (1½ to 15 hp) for cleaning hard to get at areas, reclaiming valuable materials. — Air Appliance Div. of HOFFMAN INDUSTRIES.

306—Steel Buildings — Shed roof, gable roof frameless and gable roof rigid frame units described in Catalog SX-13757. 5,000 sizes available to meet all space needs. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

309—Fiberglass Panels having 20-year guarantee on panel color and light transmission characteristics are lowest-cost glazing you can buy on cost-per-year basis. Stylux-20 is shatterproof; provides up to 90% light transmission; does not pit or erode. Use for windows, skylights, sun shades, etc.—BUTLER MANUFACTURING COMPANY.

310—Incinerator — Metal cased, insulated, refractory lined incinerators for industrial and commercial use. City smoke code approved. Fast, economical, installation — any size and capacity. — NORTH STATE PYROPHYLLITE CO., INC.

315—Pressure Vessels — Catalog 100 discusses plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given.—J. J. FINNIGAN CO., INC.

325—Water Storage—The Cylindroid, a functional design for large-volume, low-cost, ground-level water storage described in 4-page catalog. Light steel construction, and smaller field erection crew are among savings over standard ground-level tanks.—GRAVER TANK & MFG. CO., INC.

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326—Beam-Type Guardrail—Manual FB-3456 describes how Flex-Beam Guardrail protects danger spots along roads, highways, bridges, and in industrial plant locations. Installation photos, drawings, reference data, dimensions and physical properties. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

332—Heat Transfer Equipment — If you have material to liquefy, heat, vaporize, superheat, condense,

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Bulletins (Cont.)

cool or solidify, check Bulletin HE-8 describing exchangers designed for temperatures as low as minus 160 F and as high as 1600 F with pressures ranging from vacuum to 9500 psi.—HENRY VOGT MACHINE CO.

357—Mechanical Lubricators—Various force feed mechanical lubricators, accessories, and components available for lubrication systems described in Bulletin L-60.—MANZEL.

390—Tank Insulation—An uninsulated tank is like a giant radiator heating the outdoors — and that costs money. 8-page Ultralite Tank Brochure tells you how you can save over 90% of this heat loss with glass fiber blankets. Can pay for itself in six months to a year.—GUSTIN-BACON MFG. CO.

PIPING—VALVES—FITTINGS STEAM SPECIALTIES—TRAPS

410—Flexible Connectors—How all-metal connectors absorb piping vibration described in Catalog 1D-100C. Convey corrosives, simplify misaligned hookups, and save installation time. Bronze, carbon steel and stainless steel.—UNIVERSAL METAL HOSE CO.

414—Acid Resistant Pipe — 4-page technical brochure covers properties of Union 20-S stainless steel. Alloy can be welded and put into service without subsequent annealing. Shows comparative resistance to 94 different corrosive agents.—REYNOLDS ALUMINUM SUPPLY CO. —UNION STEEL CORP.

415—Steam Trap — Bulletin No. 455-B describes the Float-Thermostatic steam trap with its entire operating element in one unit making it removable without disturbing inlet and outlet connection to the semi-steel trap body, suitable for 125 psi steam pressure.—SARCO COMPANY, INC.

417—Welding Fittings—Seamless and welded fittings featured in Bulletin 60-C. Features industry's most complete line of directional changes, branch connections, flanges and special types. — MIDWEST PIPING COMPANY.

421—Air and Gas Traps — 8 page Bulletin No. 289 describes complete line of ball float traps for draining water from air, gas or steam lines or draining a light liquid from a gas under pressure (for pressures to 900 lb). Includes: installation, selection and ordering information. — ARMSTRONG MACHINE WORKS.

429—Expansion Joints — Advantages of the Gun-Pakt expansion joint described in Bulletin EJ-1917. No shutdowns for repacking. Installational suggestions. — YARNALL-WARING COMPANY.

461—Reducing Valves — Bulletin 1027 describes diaphragm and piston operated regulating valves for pressure, temperature and liquid-level control. Complete specifications. — COPES-VULCAN DIV., BLAW-KNOX CO.

463—Stainless Steel Valves — Catalog 59 SS describes gate, globe and swing check valves with valve patterns in alloys that satisfy requirements of most corrosive services. Includes section on resistance of alloys to many corrosive media under varying conditions. — JENKINS BROS.

468—Steam Traps — 40 page engineering manual aids engineers and maintenance men in sizing, specifying and buying of steam traps and other fluid specialties. All data necessary to engineer a trap installation is included. — V. D. ANDERSON CO.

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See pages 69 & 70

488—Power Piping Field Erection—Increased importance of piping erection proficiency is stressed in new 12-page brochure. Tells how field erection costs and quality are controlled and discusses welding and other technical aspects.—THE M. W. KELLOGG COMPANY.

497—Stainless Fittings—Welding fittings and forged flanges described in booklet. All specifications are included for Taylor line. Drawings and diagrams. — REYNOLDS ALUMINUM SUPPLY CO. — TAYLOR FORGE.

BOILERS—STOKERS BURNERS—FUELS

501—Packaged Steam Generators — DK units described in bulletin: 24 sizes for gas, oil or combination firing in capacities up to 60,000 lb/hr, with design pressures up to 600 psi. Special package boilers up to 100,000 lb/hr and field erected units up to 200,000 lb/hr for all fuels and all types of firing are featured. — E. KEELER COMPANY.

504—Steam or Hot Water for power, process or heat highlighted in 20-page Catalog AA-2. 20 through 600 hp units, fuel burning equipment and controls, service data, and available outdoor type enclosures detailed. — AMES IRON WORKS, INC.

516—Fuel Savings — How the packaged Ljungstrom air preheater boosts performance and offers fuel savings for small boilers and process applications is highlighted in 14-page Bulletin. Boiler as small as 25,000 lb/hr can have advantages of regenerative preheating — saves fuel, boosts output, and permits use of lower grade fuels.—THE AIR PREHEATER CORPORATION.

519—Feedwater Deoxygenation — 12 page Bulletin BW-7 describes advantages of chemical deoxygenation of boiler feedwater with an aqueous solution of Hydrazine. Covers in detail the properties and action of Hydrazine in maintaining boilers as well as recommended methods of application. — FAIRMOUNT CHEMICAL CO., INC.

529—BOILER - BURNER LEASE PLANS — New rental plan for Powermaster boilers and burner systems covers use of equipment and cost of installation without capital investment. — ORR & SEMBOWER, INC.

535—Unit Steam Boilers — Catalog AD-100 gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions. —CLEAVER-BROOKS CO.

536—Automatic Boiler-Burner Unit —Assembled plant (Scotch-type, two-pass) for all heat or power applications, low pressure or high pressure; burner to match for heavy oil, light oil, or combinations of gas/light or gas/heavy oil. Easy maintenance. Bulletin SPI-100 gives details. — INDUSTRIAL COMBUSTION, INC.

537—Waste Heat Boilers—Economical utilization of excess heat from diesel exhaust gases and from industrial and chemical processes described in Bulletin WHB-47-4. Bare tube and extended surface designs of varying capacities and applications covered. — FOSTER WHEELER CORPORATION.

552—RotoStoker—Cat. 860 describes overthrow spreader type stoker with power or hand operated dumping grates or stationary grates. Burns all grades of bituminous or lignite coals, many refuse fuels.—DETROIT STOKER CO.

557—Coal — Current brochure on "Prescription Coals." — A. T. MASSEY COAL CO., INC.

558—BOILER AUXILIARY PACKAGE UNITS—Packaged system of various compact combinations of deareating feedwater heaters, boiler feed pumps, condensate surge tanks and blow-off tanks described in Bulletin 59-1. Standard units for steam plants of 10,000 to 100,000 lb/hr capacity and pressure to 300 psig. Higher capacity units also available. — WICKES BOILER CO.

566—Packaged Combustion Unit — Completely piped, wired and tested factory assembly described in Bulletin B8/30. Has Kinetic gas burner, manual firing valve, automatic diaphragm gas valve and electronic combustion safeguard system incorporating RA680 cabinet. Avail-

able in 3 sizes with 8 capacities from 800,000 to 3,260,000 Btu/hr. — WEBSTER ENGINEERING CO.

590—Packaged Rotary Burner—Fully automatic Roto-Pack forced draft units described in Bulletin; 6 sizes, 7 types to fit all automatically fired boilers or furnaces. Burn all grades of fuel oils, gaseous fuels or combination of both.—TODD SHIPYARDS CORPORATION.

591—Steam Generators — 18 sizes, from 20 to 600 bhp, for pressures to 250 psi, also for hot water. Complete details in Catalog 811F. — SUPERIOR COMBUSTION INDUSTRIES, INC.

POWER TRANSMISSION

600—Mechanical Shaft Seals—Chempro mechanical external seal described in Bulletin CP-551. First seal designed for complete interchangeability with packing. No mounting clamps, machinery stuffing box faces or drilling holes. Install in 30 min. Adjust after installation. — CHEMICAL & POWER PRODUCTS, INC.

610—Flexible Couplings—Catalog 60 describes couplings for maintenance-free power transmission — no lubrication and no wearing parts. Recommended basic coupling arrangements and load classifications are featured.—THOMAS FLEXIBLE COUPLING COMPANY.

651—Bearing Aluminum Bars — Aluminum bearings can replace bearings of other metals which cost twice as much. No sacrifice in performance or life. Catalog 46 covers composition, machining and use. — THE BUNTING BRASS AND BRONZE COMPANY.

WATER TREATMENT—HEATING & AIR CONDITIONING—DUST & FUME CONTROL—REFRIGERATION

700—Peak Load Problems? — Keep your air conditioning and refrigeration systems operating at maximum efficiency during peak load months. Catalog tells how Anco treatment removes rust and scale and kills slime and algae in equipment. — ANDERSON CHEMICAL COMPANY.

714—ALGAE IN COOLING TOWERS—Special report is two-year study of algae in cooling towers in all parts of the country. Valuable reference piece for your water treatment library.—DEARBORN CHEMICAL COMPANY.

702—Water Conditioning — Bulletin 611C, 20 pages, describes manual and automatic softeners, zeolites and ion exchange resins, mixed-bed and multi-column deionizers, dealkalizers, ion exchange systems, filters and purifiers, and water treating chemicals. — ELGIN SOFTENER CORPORATION.

703—Industrial Air Conditioner—Bulletin 122 describes methods to obtain control of air properties with accuracy of 1% in R.H. and 1 F in temperature (up to 140 F dew point) with compact high capacity apparatus. Entirely independent of the use of moisture-sensitive instruments. — NIAGARA BLOWER COMPANY.

706—Centrifugal Blowers & Exhausters—Catalog ACB-104 covers units providing uniform air pressure up to 10 psi, or vacuum up to 12-in. of mercury. Volumes to 20,000 cfm. Line provides clean, dry air or gas at constant pressure for many processes. — Air Appliance Div., HOFFMAN INDUSTRIES.

712—Ion Exchange — Bulletins discuss Two-Bed De-Ionizers and Mixed-Bed De-Ionizers, with photos to illustrate plant applications and diagrams to show operation.—ILLINOIS WATER TREATMENT COMPANY.

715—Amine Treatment—Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems.—THE BIRD ARCHER COMPANY.

Robvon's Commercial Backing Rings are designed for quick easy alignment of pipe or tubing and assure precise close tolerance fit-up. Robvon Backing Rings allow complete penetration and fusion of the weld. Robvon Backing Rings radiograph perfect certified welds. The patented nubs automatically set the welding gap for the root-pass. The internal bevel and flat inner land assures non-restricted fluid flow.
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Bulletins (Cont.)

716—Dust Collection — Whether nuisance elimination or process material recovery, check on Whirlex Dust Collector Units. Engineering data available. — THE FLY ASH ARRESTOR CORP.

719—No Frost Refrigeration—Bulletin 105 describes with diagrams and photographs method used for food freezing, chilling and warehouse refrigeration on largest scale without frost or ice formation, insuring full capacity and uniform temperature.—NIAGARA BLOWER CO.

720—Power Roof Ventilator—4 page Bulletin 550 illustrates and describes Centrilator, the centrifugal power roof ventilator with the exclusive "jet siphon." Includes capacity and dimension tables.—CLARAGE FAN CO.

723—Fly Ash Collection—Catalog 103 tells how "Double Eddy" goes to work to increase boiler fly ash collection. Buell Cyclones will not clog or plug even with loadings up to one pound of ash per cu ft of gas. — BUELL ENGINEERING COMPANY, INC.

724—Chemicals & Services — Water treatment chemical and engineering services for The Industrial South-Southwest highlighted in 12-page Bulletin 5000-A. Specific products and their functions detailed.—DEARBORN CHEMICAL COMPANY.

731—Film Type Exchangers—Bulletin HE-7 describes typical installations. Units can be cleaned while in operation. Serve as jacket water coolers, feedwater heaters, sulphuric acid coolers, etc., and can be designed to cool or heat any liquid and to condense or evaporate any fluid. — HENRY VOGT MACHINE CO.

733—Air Handlers — Technical bulletins describe air handling units 665-47,000 cfm capacity. — ACME INDUSTRIES, INC.

743—Compressor & Engine Filters —Bulletin 310-6, 4 pages, contains information on air filters for compressors and engines, designed to eliminate costs and delays of forced shut-downs caused by dust concentration. — COPPUS ENGINEERING CORP.

756—Refrigeration Problems?—VMC compressors, intercoolers, chillers, described in Bulletin 817 — design improvements, protective devices and factory-run-in-tests. — THE VILTER MANUFACTURING COMPANY.

780—COOLING WATER CONTROL —Bulletin describes the Chemicator . . . for automatic control of scale, corrosion and slime in cooling towers and evaporative condensers. Trouble-free design with no moving parts. — IPCO LABORATORIES, INC.

ELECTRICAL

804—CONDUCTOR IDENTIFICATION—New phase identification set (Bulletin 82SP) saves labor costs on phase determination and conductor identification on underground systems without need for removing all safety grounds. Transmitter operates from either 60 cycle supply or self-contained dry cells.—JAMES G. BIDDLE CO.

813—600-Volt Wiring—How Anaconda Densheath 900 offers long life, high heat and moisture resistance, chemical stability and easy installation is described in Bulletin DM-5612. — ANACONDA WIRE & CABLE CO.

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816—High Voltage Protection — 36 page catalog of linemen's protective equipment describes products for utility and industrial electrical fields. — CHARLESTON RUBBER COMPANY.

820—Electrical Maintenance — New contract service (for Southeast only) inspects and tests motors, generators, gearing, control and distribution systems, at a cost less than 1% of value of equipment. — Atlanta Office of WESTINGHOUSE ELECTRIC.

Late Bulletins

T-78—Switchgear—Bulletin No. 3200-1A, 20 pages, provides comprehensive information on 600 volt switchgear with K-Line circuit breakers and switchboards, ranging in unit ratings from 225 to 4000 amp. —I-T-E CIRCUIT BREAKER CO., 1900 Hamilton St., Philadelphia 30, Pa.

T-79—Combustion Air Heaters—Bulletin FD 800, 4 pages, presents a new line of packaged air combustion heaters for power station and industrial process use. Steam heating and hot water coil designs are also described. — BUFFALO FORGE COMPANY, 490 Broadway, Buffalo 5, N. Y.

T-80—Sewage Treatment — Bulletin 6520-A, 12 pages, explains application of the "Accelo-Biox" total oxidation sewage treating plants, providing automated service for small industrial installations. — INFILCO INCORPORATED, Tucson, Arizona.

T-81—Keystone Package Boiler — Catalog SB 63, 16 pages, has cutaway views showing step by step the design and construction of the Keystone 2-drum water tube package boiler for oil or gas firing — ERIE CITY IRON WORKS, Erie, Pa.

T-82—Steam Jet Blowers—Bulletin 4AB, 8 pages, describes steam jet blowers to move large volumes of air in ventilating and circulating applications, and blast nozzles for use in ducts and stacks at very low drafts. — SCHUTTE & KOERTING CO., Dept. JA-34, Cornwells Heights, Bucks County, Pa.

T-83—Helicoid Gages—Catalog DH-54, 32 pages, covers line of pressure vacuum and compound indicating gages incorporating a helical roller, with no gears or teeth to wear out.—HELICOID GAGE DIVISION, AMERICAN CHAIN & CABLE CO., INC., 929 Connecticut Ave., Bridgeport 2, Conn.

T-84—Chemical Pumps—Form 70288, 8 pages, introduces cradle-mounted centrifugal pumps for general chemical and process service to handle both corrosive and non-corrosive liquids.—INGERSOLL-RAND, 11 Broadway, New York 4, N. Y.

T-85—Pressure Regulators—Bulletin 116, 12 pages, illustrates and describes "American" line of pressure regulators—direct acting, reverse acting, and control valves. — MANNING, MAXWELL & MOORE, INC., Stratford, Conn.

T-86—Maintenance Materials—1961-62 Catalog & Price List, 22 pages, covers industrial maintenance materials for floor and roof repair, machinery anchoring and grouting, and electric motor cleaning. — RANCO INDUSTRIAL PRODUCTS CORP., 13311 Union Ave., Cleveland 20, Ohio.

T-87—Process Pumps — Bulletin 1-210, 8 pages, shows how 72 basic combinations allow a choice of features for service required of these interchangeable process pumps. —BYRON JACKSON PUMPS, INC., P. O. Box 2017-A, Terminal Annex. Los Angeles 54, Calif

T-88—Valves & Accessories—Catalog 10-B, 16 pages, is a new edition on R-P&C valves and accessories, with illustrations and condensed descriptions and specifications of the various types.—R-P&C VALVE DIVISION, AMERICAN CHAIN & CABLE CO., INC., Reading, Pa.

T-89—Dust Arresters—Bulletin 164-6, 8 pages, gives design and assembly information on automatic bag type dust arresters that collect dust without interruption during bag cleaning. — NORTHERN BLOWER DIVISION, BUELL ENGINEERING CO., INC., 6409 Barberton Ave., Cleveland 2, Ohio.

T-90—Built-Up Roofing — Specification Manual, 28 pages, lists data on Carey Bonded Built-Up Roofs,

with an easy - to - read roof selector guide and drawings.—THE PHILIP CAREY MFG. COMPANY, 320 S. Wayne Ave., Cincinnati 15, Ohio.

T-91—Motor Selection—Bulletin 010, 16 pages, is a motor application guide describing single phase, three phase and direct current motors, with charts showing motor characteristics for specific applications.—CENTURY ELECTRIC COMPANY, 18th & Pine Sts., St. Louis 3, Mo.

T-92—Centrifugal Dust Separator — Bulletin No. E-221, 12 pages, includes performance data, selection and dimension charts, and installation photographs for the "HV" cyclonic separator and supports.—THE DAY CO., 810 N.E. Third Ave., Minneapolis, Minn.

T-93—Metal-Clad Switchgear — Bulletin GEA-5664F, 42 pages, details versatility, system protection, safety, compactness, and ease of maintenance and ordering of Metal-Clad Switchgear ranging from 2.4 to 13.8 kv and 75 to 1,000 mva. — GENERAL ELECTRIC COMPANY, Schenectady 5, N. Y.

T-94—Heat Exchangers — Bulletin No. 715, 8 pages, contains information on shell and tube type heat exchangers, aftercoolers, and air filters, including the new "Economat," which gives more usable volume to compressed air. — R. P. ADAMS COMPANY, INC., 347 East Park Drive, Buffalo 17, N. Y.

T-95—Motor Controls — Publication 3100-PRD-202, 16 pages describes magnetic, low voltage, synchronous motor controls using auto - transformer or part winding starting, with kva reduction. — ELECTRIC MACHINERY MFG. COMPANY, Minneapolis 13, Minn.

T-96—Square-Heat Boilers—Bulletin No. 549B, 8 pages, is an illustrated technical bulletin on Kewanee Square-Heat Type "R" series boilers for medium-size installations. Includes available heating coils and induced draft fans. — AMERICAN-STANDARD INDUSTRIAL DIVISION, Detroit 32, Mich.

T-97—Electrostatic Precipitators — Bulletin No. 2128, 12 pages, discusses the air pollution problem and how it is solved with electrostatic precipitators. Covers principle of operation, specifications, components and controls.—AMERICAN-STANDARD INDUSTRIAL DIVISION, Detroit 32, Mich.

T-98—Retractable Soot Blower—Bulletin 1073, 8 pages, has 15 drawings showing exclusive design features and photographs of complete air-driven Vulcan T-30 Mark I-A long retractable soot blower. — BLAW - KNOX COMPANY, Copes-Vulcan Division, Erie 4, Pa.

T-99—Centralized Lubrication—Catalog 82, 32 pages, features line of lubricant application equipment with descriptions of fully automatic, semi-automatic and manual methods of operation. — LINCOLN ENGINEERING COMPANY, Industrial Sales Division, 4010 Goodfellow Blvd., St. Louis 20, Mo.

T-100—Contactor—Bulletin 14B9740, 6 pages, includes ratings, dimensions and operational characteristics of the "SpaceMaker" contactor for starting, stopping and controlling large motors and other applications. —ALLIS-CHALMERS MANUFACTURING COMPANY, Milwaukee 1, Wis.

T-101 Corrosion Inhibitor—Bulletin 410-12-44, 6 pages, offers solution to high maintenance and replacement costs through use of Corrosion-Inhibitor CS to protect closed cooling and heating systems. — HAGAN CHEMICALS & CONTROLS, INC., Hagan Bldg., Pittsburgh 30, Pa.

T-102—Crane & Monorail Systems—Brochure, 12 pages, contains information on line of hand push cranes, motor driven bridge cranes, monorail systems, and a general section featuring stacker, gantry and special purpose cranes.—SPANMASTER CRANE DIVISION, Jervis B. Webb Company, 8951 Alpine Ave., Detroit 4, Mich.

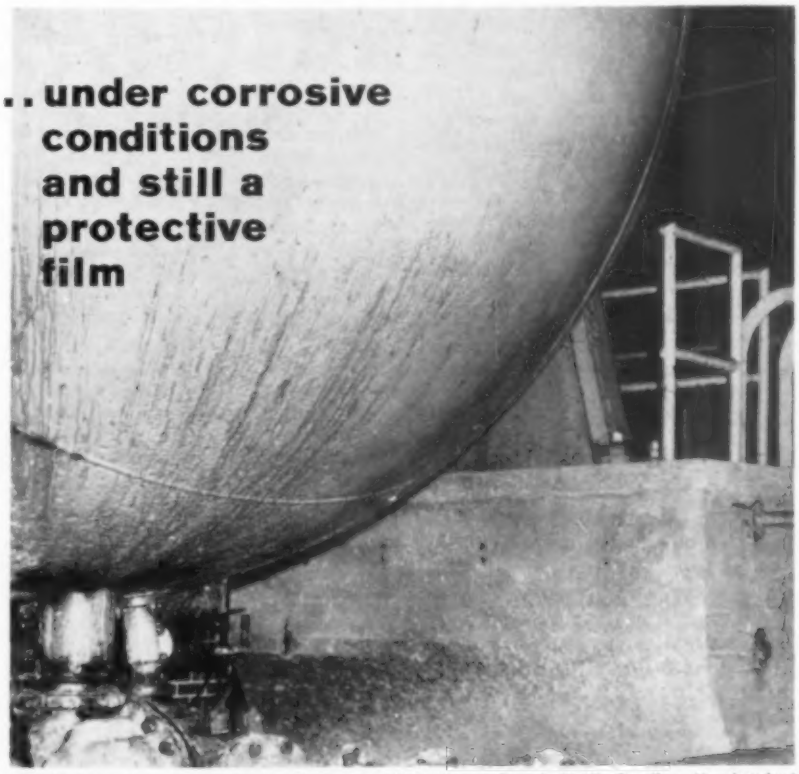
5 YEARS... under corrosive conditions and still a protective film

In early 1956 Porter M. C. R. Finish was applied on a chlorinator sphere at Olin-Mathieson Chemical Corporation's Ecusta Paper Operation. Today, some five years later, the paint film needs no attention. The coating is still sound . . . providing full protection against corrosive agents.

This is just one example of how Porter custom-tailored paint engineering can save time, work and money in a plant maintenance program. Why not learn how the Porter Program of Industrial Maintenance can be applied to your own specific problems. Write today for your copy of the Porter Industrial Maintenence Folder.

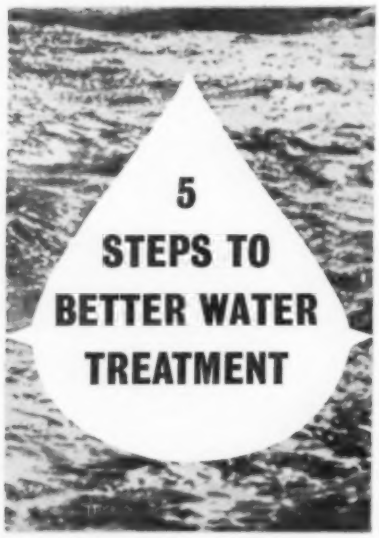
Porter Paint Co.

Technical Sales Division
P. O. Box 1439, Louisville 1, Kentucky



Chlorinator sphere at the Ecusta Paper Operation, Pisgah Forest, North Carolina. Unretouched photograph, taken in 1961, shows how the sphere looks five years after Porter M. C. R. Finish was applied. Upper right hand surface is shown after chemical stains were washed off with water. Pitting took place before painting. Dark areas are unwashed chemical deposits.

YOU, IONAC AND



How much should you pay to prevent scale? Corrosion? Foaming? Other water-caused problems in your steam-generating and cooling water equipment?

Now you can get the answers you need to do these jobs at lowest cost, through the comprehensive water treatment program available from Ionac.

This program has five steps: (1) Water Analysis, (2) Plant Survey, (3) Recommendations, (4) Periodic Supervision, (5) Continuous Control. Any part, or the entire program, can be administered for you by Ionac, a division of Pfaudler Permutit – the only company that makes both the chemicals *and* the equipment for water treatment. **You, Ionac and . . .** This integrated program is an example of the partnership between you and Ionac, in solving fluid treatment problems. Wherever there is a chance to raise efficiency or lower your costs, it takes only a call or letter from you to focus our specialized experience and facilities on your problem.

For details on the Ionac Water Treatment Program, write: Chemical Service Dept., Ionac Chemical Company, Dept. SPI-81, Birmingham, N. J.

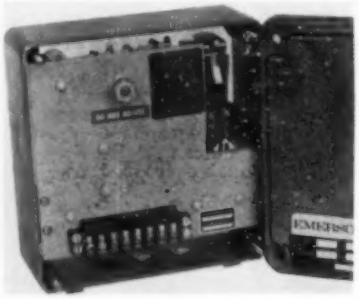
IONAC
CHEMICAL COMPANY
DIVISION OF PFAUDLER PERMUTIT INC.

NEW Product Briefs

. . . there is always a BETTER WAY

Static Protecting Device

H-1 A new static transistorized three-phase protecting device that operates from voltage signals, and protects personnel, motors, and machinery against three-phase voltage unbalance, phase failure or phase reversal, is announced by the Industrial Electronic Division of the **Emerson Electric Co.**, 8100 Florissant Ave., St. Louis 36, Mo.

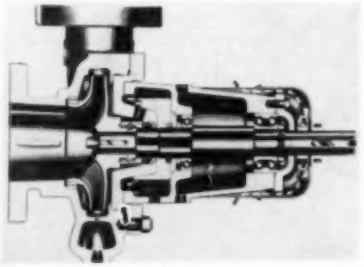


PhaseGuard continuously monitors the three-phase voltage circuits for both magnitude and phase relationship. When an unbalanced voltage condition exists, the transistorized electronic circuit triggers a circuit relay. The operating time is 30 to 52 milliseconds. A sensitivity adjustment is also provided so that a preset operating level can be adjusted between 40 to 100 volts of rated phase voltage. The device resets automatically when normal phase conditions return.

Process Pumps

H-2 An entirely new line of standard process pumps that offers the application flexibility of custom-engineered models has just been announced by **Byron Jackson Pumps, Inc.**, P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif.

From two basic pump types, the SMJ and SMJI, up to 72 basic combinations are possible. By interchanging impellers, covers, nozzle arrangements, bearing construction, cooling



methods and other components, the requirements for almost any given service can be met from standard, off-the-shelf parts.

An additional benefit for plants with a number of different pump applications is the simplicity of stocking spare parts.

One of the important new design features of the line was developed around a long-existing need of the industry — an air-cooled bearing housing (see illustration). Using a special built-in fan cooling system, it eliminates the need for a cooling water supply to the bearings in many applications, and provides further savings in both installation and operation.

Tight Shut-Off in Case of Fire

H-3 **Hills-McCanna Company**, 400 Maple Ave., Carpentersville, Ill., announces that new "Fire-Seal" seats for its line of ball valves provide tight

shutoff of flammable or dangerous fluids in event of fire which might elevate temperatures beyond the limits of standard nonmetallic seating materials.

Construction consists of a primary seat of metal-encaged reinforced Teflon which incorporates an accurately machined secondary metallic seating surface. If the reinforced Teflon is destroyed by excessive heat, shutoff of flow is insured by the metal-to-metal contact between the ball and the secondary seat.

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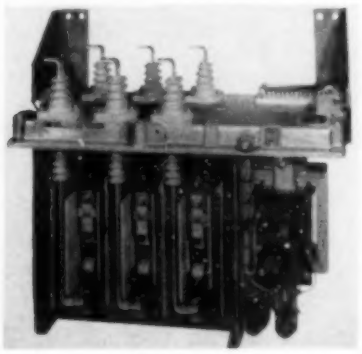
See pages 69 & 70

Oil-Immersed Contactor

H-4 A new oil-immersed contactor (Type K) for starting and controlling a-c motors on 2300- and 4800-volt power systems is offered by **Westinghouse Electric Corporation,** P. O. Box 2099, Pittsburgh 30, Pa. This three-pole contactor has a continuous current-carrying capacity of 400 amperes and an interrupting capacity of 50,000 kva.

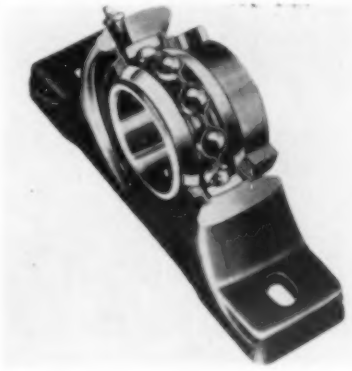


The contact assemblies which operate submerged in oil employ magnetic blowouts and single-break contacts. The copper-tungsten contact surfaces are close to the tank bottom and arranged so that the arc movement, during interruption, is horizontal through the oil. This feature results in maximum head of oil above the contacts and keeps the arc well below the oil surface when heavy fault currents are being interrupted.

Other features include a permanent tank lifter, complete front accessibility of parts for easy maintenance, and quiet trouble-free operation by means of d-c operating coils.

New Ball Bearing Pillow Blocks

H-5 **Link-Belt Company,** Prudential Plaza, Chicago 1, Ill., has announced a new series of heavy duty ball bearing pillow blocks equipped with self-aligning, single row, deep-groove precision ball bearings. A complete range of shaft sizes from ⅝ to 4 inches is available.



The new ball bearing blocks are heavier and have dimensional interchangeability with other makes. They are an addition to Link-Belt's complete line of ball and roller bearings to better serve expanding industrial requirements.

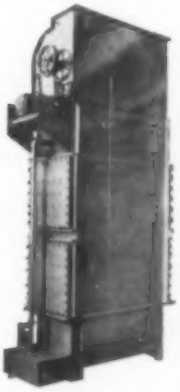
Repair Compound

H-6 A new repair compound consisting of 80% bronze and 20% plastic, is now available from **Devcon Corp.,** Danvers, Mass.

"Devcon BR" has been successfully used by foundries for filling large blow holes and other imperfections in bronze and brass castings; by a pump manufacturer to repair large castings which had been machined incorrectly; by a paper mill to extend the life of large pumps and valves by building up the inside dimensions of these units, and by a ship builder to repair large marine propellers.

Easy to use, the compound is simply mixed with the hardening agent supplied with each unit, and

NIAGARA
Air-Cooled Heat Exchangers Bring You Extra Savings



Your Niagara Aero Heat Exchanger sets you free from dependence on a costly cooling water supply and solves the problem of water disposal. It pays for itself quickly and its long-lasting quality and dependability keep it constantly saving money for you and adding to your profit.

This Niagara design also saves you much labor and money in installation and upkeep. Its cleanable coils are easily accessible, as are all interior parts. Its panels are removable for cleaning and painting. It is easy and inexpensive to keep in "new machine" condition.

Niagara Aero Heat Exchangers have been making good records as revenue producers and cost savers for their owners for more than thirty years. Use them wherever you need to cool a liquid or a gas in industry.

Write for bulletins 120 and 132.

NIAGARA BLOWER COMPANY
Dept. SP-8, 405 Lexington Ave., New York 17, N. Y.
Niagara District Engineers in Principal Cities of U. S. and Canada

POSITIVE CORROSION CONTROL FOR STRUCTURAL STEEL

at 1/2 the average COST

in 1/2 the average TIME . . .

GACOTE

NA-62

MAINTENANCE COATING

Protect your structural steel, tanks, piping, towers against weathering, moisture, chemical fumes and splash with GACOTE NA-62 Maintenance Coating. Provides positive corrosion control—cuts application cost and time in half.

- Minimum Surface Preparation
- Good Adhesion Without Primer
- Easy To Apply—Any Season
- Applies To Damp Surfaces

GATES ENGINEERING CO.
WILMINGTON 99, DELAWARE
PROTECTIVE COATINGS AND LININGS: GACOTE, NEOPRENE, HYPALON, URETHANE, EPOXY, VINYL, NATURAL RUBBER, PENTON

New Product Briefs (Continued)

then applied. The mixture hardens in approximately two hours without the use of heat or pressure. Once hardened, it can be drilled, ground, or machined like metal. Its appearance after machining is similar to bronze.

Devcon BR bonds to iron, bronze, steel, aluminum, brass, wood, glass, and many other surfaces. Because of its high bronze content, it expands and contracts like metal and effects a permanent repair.

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See pages 69 & 70

Selenium Battery Chargers

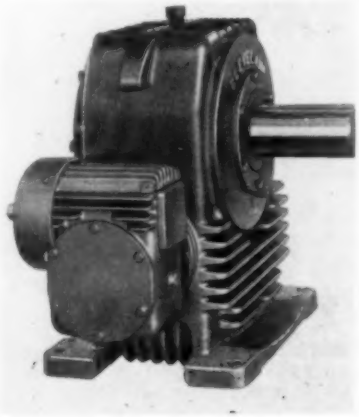
H-7 Selenium-type battery chargers, designed for cyclic, floating, and trickle charging of all types of storage batteries for switchgear control, signals and communications, and engine

starting, are available from the **Westinghouse Electric Corporation,** Pittsburgh 30, Pa.

Each charger is designed to cover a wide range of battery sizes. Sufficient taps and rheostat are provided to allow fine adjustment of the charging rate on most applications. These chargers are suitable for resistive and inductive loads.

Worm Gear Reduction

H-8 **Cleveland Worm & Gear Division,** Eaton Manufacturing Company, 3300 East 80th Street, Cleveland 4, Ohio, announces that reductions of up to

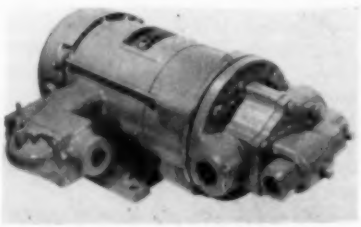


3600:1 have been attained by mounting a worm and gear at a 90° angle to another. Together with enclosed housings, the double reduction speed reducer is available in a wide selection of ratios ranging between approximately 25:1 and 3600:1. Units come in seven sizes with torque capacities ranging approximately between 22,700 inch pounds and 145,000 inch pounds.

Primary and secondary reduction housings are parallel to one another. The high speed housing is cooled to AGMA Standards by an aluminum or plastic fan of unique design. In addition, large oil bath capacities and deep fins on both housings keep operating temperatures below a 100 F rise above ambient. Both reductions share a common oil bath.

Motor-Mounted Pumps

H-9 A new series of motor-mounted rotary pumps for handling clean liquids and solvents (up to 5000 ssu) is announced by **Blackmer Pump Com-**

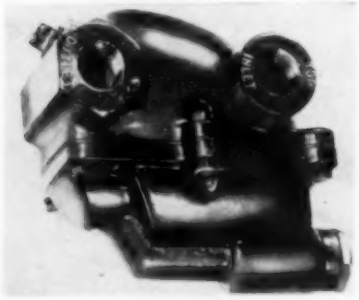


pany. Grand Rapids, Mich. These versatile pumps offer new economy and ease of installation on jobs requiring delivery rates from 10 to 30 gpm at pressures up to 125 psi.

In this compact design the pump and motor are built as an integral unit with a common heavy-duty shaft supported by the motor bearings. Because the pump is mounted directly to the motor, there is no need for separate pump bearings, no need for a second seal, a coupling, a pump head, or a mounting base. Installation is fast and easy because there is no shaft coupling to cause misalignment, and the pump discharge can be directed to left, right, up or down simply by removing four capscrews and repositioning the cylinder. Each pump is equipped with a built-in relief valve to bypass delivery in case of excessive pressures.

Drip Trap

H-10 **The V. D. Anderson Company,** 1935 W. 96th St., Cleveland 2, Ohio, nationally known manufacturer of steam, air and gas specialties, announces the



addition to its steam trap line of F & T Drip Traps for automatically draining condensate and venting air in lines up to two inches in size.

Principle use of this Drip Trap is heating and low pressure systems such as unit heaters, unit ventilators, return ends of blast coils, hot water heaters, steam main and riser drips and flash tanks.

Hollow Structural Tubing

H-11 A new era is dawning for structural tubing in America. Evidence of such an era was indicated by a recent announcement by **U. S. Steel's National Tube Division.**

A program is underway by the 96-year-old producer of quality pipe and tubing products to market a

wide range of square and rectangular hot rolled hollow structural tubing. It will be produced to standard structural steel specifications and priced in comparison with prices on other structural members.

According to company officials, this broad program will fully establish tubular construction and design in America. Similar to its status in Europe, structural tubing should find countless applications in a wide scope of industries.

The square or rectangular tube is very adaptable to modular construction because it integrates well with windows, mullions and partitions. Also, load-bearing columns need not be boxed in, but can be left exposed with a simple finish as demonstrated in the photograph.

Jet Powered Precipitator

H-12 **The Permutit Company,** a division of Pfaudler Permutit Inc., 53 West 43rd St., New York 36, N. Y., has released design and operating details of its new water-jet powered precipitator, a simplified and economical solids-contact type water clarifier that has already demonstrated high efficiency in field tests carried out over the past eight months.

Designated the type M Precipitator, the new clarifier is described

QUELCOR INC

AEROSOL
VINYL SPRAY
for
INSTANT REPAIR AND PROTECTION

Quelcor is an air dry vinyl coating which adheres tenaciously to practically any clean, dry surface. It dries in minutes to a tough, durable, plastic film which prevents corrosion and improves appearance in one easy application. Packaged in a convenient aerosol container it is a versatile tool kit spray gun for all maintenance personnel. Its exceptional dielectric properties make it an excellent electrical insulator.

Practical, easy to use, economical

- **Used as sprayed on Electrical Insulation**
- **Instrument Protection and Color Coding**
- **General Maintenance Coating for Immediate Touch Up and Repair**
- **Available in Clear Colors and in Bulk**
- **Resistant to Weather, Acids, Moisture, Fumes, Salt Spray, Abrasion**

Regular 1 lb. can available for test for $1.00
(To cover packaging and mailing)

QUELCOR INC
BOX 29-C CHESTER, PENNSYLVANIA

VON ARX AIR GUN

"A SCALING TOOL WITH INTELLIGENCE"

- *Cleaning!*
- *De-Rusting!*
- *De-Scaling!*

Here's a tool that guarantees to solve your toughest scaling problems.

RUST, SCALE, CORROSION ARE QUICKLY CHIPPED AWAY; STONE AND MASONRY ARE EASILY CLEANED WITH THIS VERSATILE TOOL.

Chipping needles adjust to contours automatically cleaning uneven surfaces — Rivets, Crevices, Corners and Confined places.

The **VON ARX AIR GUN** is Economical, Easy to operate and a great Labor-Saver.

Comes in handy, lightweight sizes for any specific application.

See this tool in action.

Write or call for literature or a demonstration. No obligation, of course.

The MARINDUS COMPANY, Inc.
BOX 286 • WOODCLIFF STATION
NORTH BERGEN, NEW JERSEY • UNion 9-4567

New Products (Contd.)

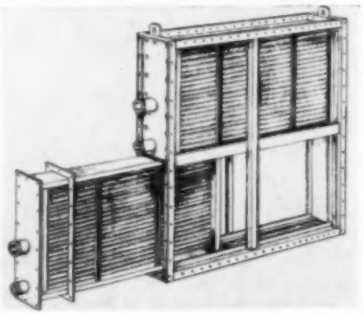
as a sludge blanket type, in which the jet effect of water ejected from the tips of the agitator is the sole driving power required for the agitator unit.

In operation, raw water and chemicals are pre-mixed and introduced to the precipitator through an inlet at the center of the tank beneath the agitator hub. A conical deflector, on the agitator hub, directs the water - chemical mixture outward across the tank bottom. Reaching the tank wall, the fluid mixture tends to rise but is redirected back to the center by a horizontal baffle on the tank wall. In this manner, a rolling current pattern is established.

Water chemicals and sludge are kept in intimate mixture for maximum precipitation. A very effective sludge blanket is formed and maintained in suspension. Sludge and heavy particles settle to the bottom, clarified water is drawn off the top of the tank.

Air Combustion Heaters

H-13 A new line of packaged air combustion heaters for power station and industrial process use is now available from **Buffalo Forge Company,** 490 Broadway, Buffalo, N. Y.



Designed for installation in ductwork breeching, the new units feature removable core coils and Aerofin tubing. Shipped in one-piece, "packaged" assemblies, Buffalo air combustion heaters are ready for mounting ahead of or behind forced air fans.

Aerofin, heavy-duty core coils are pitched in the casing for either horizontal or vertical air flow, to provide proper condensate drainage and to prevent possible freezing. Temperature of heated air is uniformly maintained across the face of the coil. Coil tubes, equipped with smooth, tapered fins, assure maximum heat transfer.

Truck Loads Crates With No Ground Clearance

H-14 Flush-bottom crates and cases, up to 1,000 pounds, are easily loaded and moved directly from the floor by one man using the Crate Mate, a new materials handling truck introduced by the **Stokvis Multiton Corp.**, 18 Secatoag Ave., Port Washington, New York.

Even though a crate or case is resting right on the ground (1) it is ready for loading on the new Crate Mate. The operator rotates the steering handle 90° which permits him to slide it to the rear of the truck. He then inserts the truck's special steel "tongue" beneath the crate and levers back (2) on the steering handle which is attached to the "tongue." The body of the truck is then pushed (3) under the tilted crate — an easy operation because of rollers atop the body. After the operator slides the handle back to the front of the truck, the body may be transported (4) to its destination.

After transit, a sharp tug on the steering handle will dislodge the crate and permit it to slide over the rollers to the ground.

The Crate Mate has been tested and proven in daily industrial use and is constructed to last for years with minimum maintenance. For example, it has a galvanized finish that resists corrosion and routine abuse — never needs painting.

Other features of the new truck include: transport rollers with SKF ball bearings, steel slide rollers with bronze bearings and rubber-tired swivel casters with double ball bearings. A built-in floor lock holds the Crate Mate stationary on ramps or inclines.

The Crate Mate will load crates or cases with 0'-2" ground clearance, weighing 250-1,000 pounds and having either a length or width of 3' to 6'.

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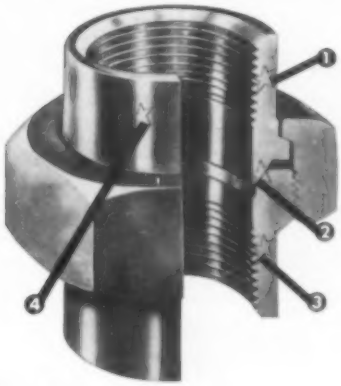
See pages 69 & 70

Low Cost Conversion Process

H-15 **Aqua - Chem, Inc.**, 225 North Grand Ave., Waukesha, Wis. (formerly Cleaver - Brooks Special Products), pioneer and leading manufacturer of flash evaporation and vapor compression sea water conversion equipment, has announced commercial availability of a new electrodialysis process to convert brackish water into fresh water at a cost substantially below that possible with any equipment currently in operation.

In the electrodialysis process, brackish water is fed between two ion permeable membranes and an electric current is passed through

only
CATAWISSA
gives you all these features for your forged steel pipe union requirements



1. **Uniform walls** for even expansion and contraction under temperature changes. They follow the pipe!

2. **Catawissa Ball-to-Angle Seats** give you a "Perfect Seal" regardless of pipe alignment!

3. **More than adequate** wall thicknesses give you Catawissa's 3-to-1 Safety Factor (3000-lb. service, 9000-lb. test; 6000-lb. service, 18000-lb. test)!

4. **Round, straight barrels** for fast wrenching. No uneven or tapered surfaces to cause wrench slips or wrench locking!

Catawissa Perfect Seal Pipe Unions are made by Union Specialists from 80,000 lb. tensile strength steel (ASTM Spec. A-105-55T, Grade II). Steel forgings from our own forging mill are closely checked for imperfections . . . and finishing on modern, automatic machines with close inspection during and after production give you pipe unions second to none!

Write for Catalog 60 showing the complete Catawissa line of Perfect Seal Products.

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2
NEW
HIGH PERFORMANCE TOOLS
JOIN
AIRETOOL
LINE...

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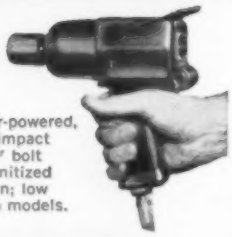
Rugged, air-powered, reversible impact wrench; ½" bolt capacity; unitized construction; low torque; two models.

2

400-T sheet metal tapper; runs at 400 rpm; rugged construction; reversible; muffled air motor; lightweight, easy to handle.

Where production demands are highest, you'll find Airetool fastening and production tools meeting or exceeding requirements, and the new 625 and 626 impact wrenches and 400-T tapper are no exceptions. Airetool's complete line of quality, job-proven, pneumatic production tools includes nutsetters, screwdrivers, drills and grinders. When you want production . . . you need Airetool.

For complete information, write

AIRETOOL
MANUFACTURING COMPANY
SPRINGFIELD, OHIO

REPRESENTATIVES in principal cities of U.S.A., Canada, Mexico, South America, England, Europe, Puerto Rico, Italy, Japan, Hawaii.
CANADIAN PLANT: Brantford, Ontario.
EUROPEAN PLANT: Vlaardingen, The Netherlands.

the cell. The membranes are so designed that one is selective to positively charged ions and the other to negatively charged ions. One membrane passes negative ions and the other positive ions with the result that the water in the stream between the membranes becomes purified while the water on the opposite sides of the membranes becomes concentrated with salinity.

The Netherlands organization which developed the process is known as T.N.O., an abbreviation of Toegepart Natuurwetenschappelijk Onderzoek. T.N.O. was established as a research council in 1932 under a special Netherlands Act. The research organization originated the electrodialysis process and is an acknowledged world leader in the design and development of electrodialysis equipment.

Under the agreement with T.N.O., Aqua-Chem has exclusive manufacturing rights in North America and has access to the full store of T.N.O.'s years of accumulated data and experience.

KEEP UP-TO-DATE
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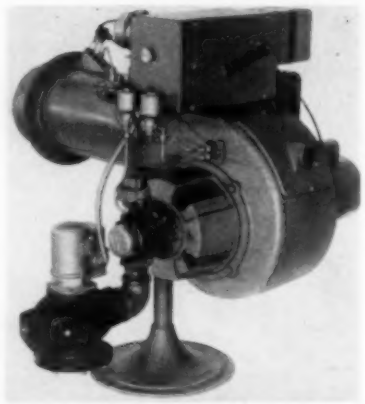
READER SERVICE

See pages 69 & 70

Gas/Oil Burner

H-16 **Webster Engineering Division** of Midland-Ross Corporation, Tulsa, Oklahoma has introduced completely redesigned and improved models of its gas/oil burner. Designated as the "Model J Cyclonetic," the two sizes immediately available offer input ranges from 700 to 2,250 mBtu/hr and 1,400 to 4,200 mBtu/hr respectively. Both models are offered as single or dual fuel burners for any fuel gas or No. 2 fuel oil, arranged for either pedestal or suspended flange mounting.

The Model J Cyclonetic is a factory assembled, wired and tested package incorporating a unique combustion head design which assures positive flame retention for quiet, stable combustion. Suitable for positive or negative furnace pressures in

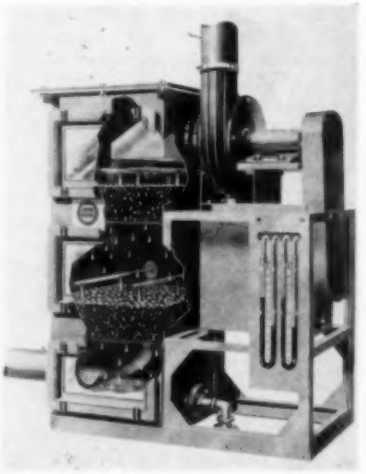


any type of boiler or furnace, optimum efficiency is achieved with surprisingly low motor horsepower on both gas and oil operation.

The standard burner package includes an indicating program timer to sequence the blower motor, flame rectification combustion safeguard and motorized gas valve or solenoid oil valves. The system provides for complete purge prior to pilot ignition and after normal operation, as well as insuring a complete purge cycle following automatic fuel transfer or interruption of normal operation for any reason.

Flooded-Bed Scrubber

H-17 The Air Pollution Control Division, **John Wood Company,** Nicolet Ave., Florham Park, N. J., announces the development of a flooded-bed scrubber, with improved capability to remove extremely toxic and corrosive contaminants. The unit is now available



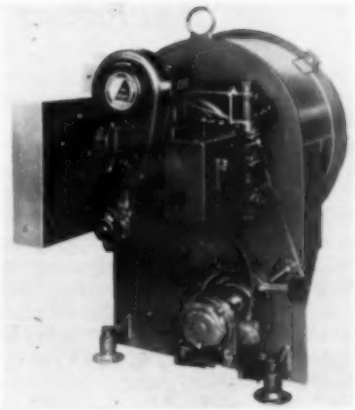
in rated capacities from 200 to 5,000 cfm and larger in combination.

A unique principle of operation is employed in this scrubber to eliminate fumes, mists, vapors and light dusts from processing gases. Two packed beds, each flooded with a scrubbing liquid, sustain intimate and continuous contact between the contaminated gas and the scrubbing medium. Scrubbing action at the contact area is activated by the nature and energetics of the surfaces.

Package Combustion System

H-18 A new compact, fully integrated and packaged combustion system, known as the "Forced Draft Thermopak," has been developed by **Preferred Utilities Manufacturing Corp.**, 41 East 42nd Street, New York 17, N. Y.

This unit will convert any commercial or industrial high or low pressure boiler, large oven or dryer to fully automatic operation, utilizing fuel oil, gas or combination oil-gas. It is intended for applications where natural draft is inadequate or induced draft is unavailable; and may be applied to any firebox where



pressure does not exceed ¾" w.c. at maximum firing rate.

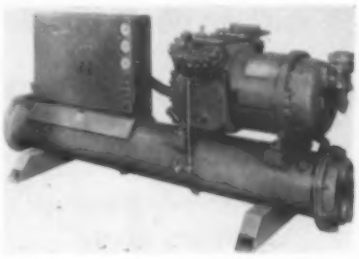
The burner and its accessories are all mounted on the extension front, without need for obstructive front supporting structure. A highly efficient inset multiblade fan supplies all secondary air for combustion, and shutter-type primary air and a vortex secondary air-metering device insure proper regulation. The flame is sustained in the unit's factory installed combustion chamber, without depending on massive internal boiler refractory.

Hermetic Condensing Units

H-19 A new line of hermetic condensing units (Model CNU) is available from the Air Conditioning Division of the **Westinghouse Electric Corporation**, P. O. Box 510, Staunton, Va. The units, in ratings from 20 to 60 tons, are designed for use in field assembled commercial and industrial air conditioning equipment.

Suction operating temperatures from 20 to 50 F are standard. Temperatures outside this range are available for special applications as required.

There are six voltage ratings at three phase, 60 cycles: 208, 220, 240, 440, 480, and 550; at three phase, 50 cycles, three ratings: 220, 380, and



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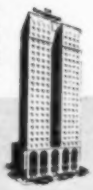

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HOTEL PITTSBURGHER MOTEL

Opposite Greater Pittsburgh Airport. 56 air-conditioned rooms, tile bath, radio, TV, private phone. Courtesy car to and from airport. **AMherst 4-5152**

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*Teletype Service. Telephone any Knott Hotel. All Knott Hotels and offices in U.S. connected by teletype.

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Don't spoil it- KROIL it!

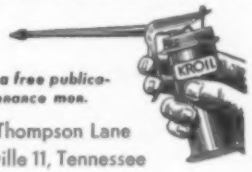
Don't ruin a valuable piece of equipment merely because some part is rusted tight. Apply *KROIL*, the amazing new chemical lubricant that creeps into millionth inch spaces (proved by laboratory tests), dissolves rust, supplies necessary lubrication and . . .

Loosens Frozen Parts

18,000 of America's leading plants can't be wrong. They have used KROIL for ten years and depend on it to save expensive labor and valuable parts. They say: "Kroil loosened bushings after a 12-ton press had failed" . . . "on repairing heat treat trolleys formerly destroyed every nut. Now Kroil saves them all, and time, too."

You too can get these results. Try KROIL on money-back basis.

Gallon, $4.35; with Kroiler squirt gun, $5.25, f. o. b. factory.



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New Product Briefs (Continued)

400. All units are equipped with either line-start or part-winding-type starters.

Each condensing unit consists of a water-cooled condenser, a Type CLS hermetic compressor, and a control center. It is factory assembled, completely prewired and prepiped, and includes vibration mountings under the compressor. Starters, safety controls, gauge panel, and all internal control and power wiring between control center and compressor are included as standard items.

Solids Flow Meter

H-20 A new solids flow meter for measuring total flow of granular material such as coal, ore, and crushed rock in vertical ducts, spouts, or pipes with diameters up to 40 inches is now available from **Bailey Meter Company**, 1050 Ivanhoe Road, Cleveland 10, Ohio.

A helical quarter-turn vane in the pipe converts the velocity of the flowing material into a rotational speed. The rotary motion is carried out of the pipe at 90 degrees to the flow of material by means of a flexible shaft and a set of change gears. The shaft operates either a direct mechanical counter or an electric contact mechanism to operate a remote counter.

An air pressure connection in the meter provides an air flow for purging any dirt that may have a tendency to work into the bearings from the measuring pipe. Air consumption is less than 0.1 scfm at 5 psig supply. Bearings are capable of dry operation at 10 rpm for approximately 50,000 hours.

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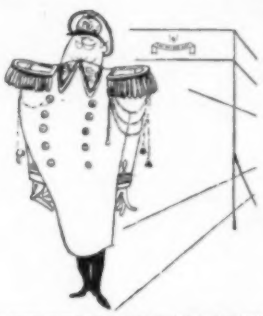
Television for Inspection

H-21 **Inspectoline Incorporated**, 9501 Euclid Ave., Cleveland 6, Ohio, is now marketing the first mass produced complete television system for the inspection of sewers, water lines, conduit, wells, oil lines, gas lines, water tanks, etc.

This water tight system is complete with an enclosed lighting sys-



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Salon-size rooms • Terraces • New appointments, newly decorated • New 21" color TV • FM radio • New controlled air conditioning • New extension phones in bathroom • New private cocktail bar • Choice East Side, midtown area • A new concept of service. Prompt, pleasant, unobtrusive.

Single $15 to $22 Suites to $60
Special rates by the month or lease

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ORegon 9-3900
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tem, 500 or 1,100 feet of cable and generator.

The system is capable of being pulled through pipe lines as small as 4" in diameter and as large as 48" in diameter.

The sales price is as low as $6,500.-00 and up. The use of close circuit television has saved municipalities and industry millions of dollars in the past several months.

Pressure Regulator

H-22 **OPW-Jordan,** 6013 Wiehe Road, Cincinnati 37, Ohio, announces a new extra sensitive pressure regulator, available from stock in ductile iron (#160A) or bronze (#260A) in ¼, ⅜, ½, and ¾ inch sizes. In severe test on steam service with 20 psi inlet and 7 psi outlet, the valve showed a swing of only plus or minus .1 psi. Pressure regulation is equal to piloted valves without the trouble associated with pilots . . . completely self-operated. It is suitable for steam, water, air, oil, gas or chemicals. Pressure control range is from .5 to 125 psi. Stainless steel self-cleaning and self-lapping sliding gate seats are standard (features tight shut-off). The unit is suitable for 250 psi at 500 F; maximum pressure drop, 175 psi; minimum pressure drop, 3 psi.

Coolers for Fluids

H-23 Marley DriCoolers are a practical, economical approach to controlled, close-circuit cooling of recirculated clean fluids, according to **The Marley Company,** Kansas City, Missouri. These units are said to have all the requisites essential for achieving a high standard of heat transfer capability with economical utilization of applied horsepower, long service life without excessive weight, unrestricted adaptability to location, automatic operation in all climatic zones.

DriCoolers are engineered for maximum heat rejection capacity by utilization of vertical forced draft (blow through) air flow and diagonally mounted coil sections. Direction of air travel, with casing on four sides of unit, permits operation at full efficiency regardless of prevailing air currents — allows complete flexibility of location. Through the application of functionally automatic, basically simple and easily maintained damper type controls, DriCoolers are capable of maintaining close temperature tolerance.

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VALDURA VAL-CHEM COATINGS *STOP* costly corrosion

Your plant's share of the tremendous loss to corrosion last year could have been stopped with one of Valdura's Val-Chem chemically-resistant coatings. Remember—no one coating can solve all the problems. That's why Valdura offers you a *complete line* to fit every need—the new, field-tested Val-Chem Coatings. The assistance of Valdura's nationwide force of field representatives—experts in corrosion control—is at your service. How can Val-Chem Coatings stop corrosion in *your* plant? Write today on your letterhead for a prompt solution!

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Increasing numbers of forward looking engineers recognize that coal is the most economical fuel over the long term, and that it can be burned most efficiently with Detroit Stokers.

Stability of price and lower cost in most industrial areas have made coal the most favored fuel in new plants being built today.

Detroit Stokers keep pace with this trend through continuous new developments and improvements that provide greater efficiency, easier operation and more economy.

Detroit Stokers are built for years of dependable service. Savings in fuel cost and maintenance continue to pile up long after the initial investment has been repaid.

This has been proved in hundreds of prominent Utility, Industrial and Institutional plants.

YOU can enjoy the benefits of modern, economical coal firing—Let us show you the Detroit Stokers best suited to your operating conditions.

Detroit RotoGrate Stoker—for boilers up to 400,000 pounds steam per hour capacity. A spreader stoker with forward moving grates which continuously discharge ash at the front.

*BETWEEN THE LOSTOKER AND ROTOGRATE STOKER IS A COMPLETE LINE OF UNDERFEED AND OVERTHROW SPREADER STOKERS FOR EVERY NEED.

Detroit LoStoker—capacity range 3,000 to 12,000 pounds steam per hour. An underfeed stoker of high efficiency—available with "start and stop" or "full floating control."

Detroit Stokers cost less: cost equals initial investment plus upkeep plus production losses due to equipment outage. The total is less with Detroit.

DETROIT STOKER COMPANY

Division of United Industrial Corporation

Main Office and Works, Monroe, Michigan • District Offices or Representatives in Principal Cities

This simple trap operating principle provides the efficiency, dependability and freedom from maintenance necessary for the most profitable use of steam

When trap is first installed, the inverted bucket is down and the valve is wide open.

When steam is turned on, condensate (solid color) flows into trap and out through discharge orifice, until —

Steam (light color) reaching the trap floats the inverted bucket and closes the valve.

When more condensate enters the trap, the bucket loses buoyancy and pulls on valve lever.

When weight of bucket times leverage overcomes pressure on valve, bucket sinks and opens trap.

Key: condensate · steam · steam bubbles · air bubbles

ARMSTRONG INVERTED BUCKET STEAM TRAPS

are designed and made to give you these big benefits:

Armstrong Traps, the first inverted bucket steam traps, now represent the most advanced development of this time-proven principle. They provide all the advantages necessary for efficient, economical condensate drainage from virtually all types of steam using equipment.

1. *No steam loss* – Steam never reaches the orifice even when there is no condensate load.
2. *Automatic air elimination* – Vent in trap bucket passes air and other non-condensibles through to be discharged with condensate.
3. *No cooling leg required* – Condensate is discharged at steam temperature as fast as it reaches the trap because trap operates on difference in density between steam and water not on temperature.
4. *Operates on any back pressure* – Failure of one trap in system will not cause others to open because high back pressure does not affect an Armstrong trap other than to reduce capacity. As long as there is a pressure differential across the orifice the trap will close on steam and open for condensate.
5. *Unaffected by ordinary dirt* — Swirling action of condensate keeps dirt in suspension until discharged with condensate, prevents it from lodging in valve.
6. *Completely dependable* — Proved design plus the use of all stainless steel working parts assure continuity of service and length of service unmatched by any other trap.
7. *Big capacity in a small, economical package* — Armstrong design gives you the highest practical capacity for any given pressure. And remember, Armstrong capacity ratings are based on *hot* condensate at the *working pressure differential* stated, not on theoretical orifice capacities.

Further information on these advantages plus much additional information is given in the 48 page Armstrong Steam Trap Book. Ask your local Armstrong Representative or write direct.

860 Series for low pressure heating service.

800 Series, side inlet, side outlet.

No. 801, side inlet, bottom outlet.

880 Series, integral strainer.

200 Series, bottom inlet, top outlet.

Forged Steel Series for high pressures, high temperatures.

The 48 page Armstrong Steam Trap Book tells how to correctly size, install and maintain steam traps for any pressure, any temperature, any load plus full catalog data on Armstrong Steam Traps. Ask for Catalog K.

ARMSTRONG MACHINE WORKS

8061 Maple Street • Three Rivers, Michigan